



PART IV.—EDUCATION, SCIENCE, AND ART (C).

Administration Report of the  
Director of Medical and  
Sanitary Services  
for 1925.

(Dr. J. F. E. BRIDGER.)

NOVEMBER, 1926.

*Ordered by His Excellency the Governor to be Printed, November 6, 1926.*

COLOMBO:

PRINTED BY H. ROSS COTTLE, GOVERNMENT PRINTER, CEYLON.

To be purchased at the GOVERNMENT RECORD OFFICE, COLOMBO.

1926.

*Price Re. 1.60.*

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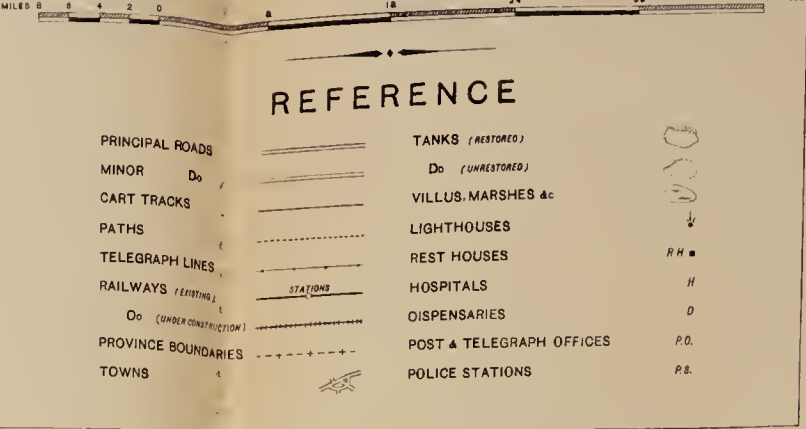
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# CEYLON

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Published under the direction of Mr. A. J. Wickham F. R. G. S. Surveyor General, Ceylon

## REFERENCE

- HOSPITALS
- CENTRAL DISPENSARIES
- BRANCH DISPENSARIES & VISITING STATIONS

GULF  
OF  
MANNAR

PEARL  
ISLANDS

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Ceylon.

ANNUAL MEDICAL AND SANITARY REPORT 1925.

The Report is a Comprehensive one: the map gives an indication of the medical provision for the poor of the Island. The Medical and health officers now number 307.

page 2.

The expenditure for the year on medical services was Rs 7,798,824/- an increase of over 2 million Rupees in the last 5 years; there is I understand a considerable increase in the 1926-27 Estimates for these services.

The expenditure on medical works is not included in this sum, nor is the sanitary expenditure (except payment of staff). This latter is provided from the funds of the Municipalities, Local Boards, District, Rural and Village Councils in the Colony. There is local Government, the Director of Medical and Sanitary Services is a member of the board and the Municipal Council of Colombo, his senior Medical and Health officers are members of the other Councils and boards in the Island.

The "Model Medical Report" has been followed to some extent only. The new nomenclature of causes of death has been followed in the Registrar General's Report on Vital Statistics.

Vital Statistics

Estimated population 5,509,502 an increase of nearly 150,000 over last year.

Birthrate 38.57 per mille against 39.79 in 1924

Death rate 23.46 " " " " " " 25.22 " " " " " "

Infant

The report is a comprehensive one, and gives  
an outline of the various questions that have  
arisen. The report is a valuable one, and  
should be read by all.

The committee has the honor to acknowledge  
the receipt of the report of the Board of Health  
for the year 1901. The report is a valuable one,  
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Infant Mortality in 33 principal towns, 216 per mille against 235 in 1924, it seems the activities of the Child Welfare Associations etc. are bearing fruit.

The term phthisis is still used as the cause of death.

Dysentery is still <sup>a</sup>prevalent cause of death. The Lying in Home and Clinic are doing good work.

Malaria on Estates showed a marked decrease but deaths from "pyrexia of unknown Origin" accounted for 15,707 deaths during the year. Over R 200.000 worth of Quinine was distributed free.

p 4 to 9

Paragraph (12A) includes an interesting report by Mr. Carter the Government Malariologist. A full report will be published shortly. A Malarial Control Board has been set up, Dr. Barnes and Russel of the International Health Board visit the Island and advised as to Malarial control.

p 9.

Paragraph 12 (b)) is an interesting report by Dr. Sweet of the International Health Board on the "incident of Filariasis in the Island."

p.11

Cholera

Small outbreaks occurred in several parts of the Colony probably brought from India by carriers.

Smallpox.

28 cases with 3 deaths occurred of these 22 were landed from steamers at Colombo. 135,216 primary vaccinations were performed. 93.81<sup>per cent</sup>/were successful. Generally the vaccination is efficient, I tried to introduce an Ordinance making re vaccination compulsory but was unsuccessful.

Enteric Fever

1,520 cases were treated in Government hospitals with a death rate of 25%.

p.12.

Cancer

400 cases were admitted to hospital. The commonest site of the

Indian mortality in 33 principal towns 219 per mille  
against 235 in 1924, it means the activities of the White  
Welfare Association etc. are bearing fruit.

The term phthisis is still used in the sense of cough.  
Tuberculosis is still prevalent cause of death. The lying in  
home and clinic are doing good work.  
Analysis of statistics showed a marked decrease and deaths from  
"Tuberculosis of unknown origin" decreased from 14,707 deaths  
during the year. Over 4,000,000 worth of medicine was  
distributed free.

Paragraph (12A) introduced an interesting report by Mr. Carter  
The Government is planning a full report will be published  
shortly. A Medical Council has been set up, Dr. Baines  
and members of the International Health Board visit the island  
and advised as to malaria control.  
Paragraph 12 (b) is an interesting report by Dr. Baines of  
the International Health Board on the findings of malaria  
in the island.

### Climate

Small epidemics occurred in several parts of the colony  
probably brought from India by carriers.

### Religion

The census with 3 deaths occurred of these 22 were landed from  
abroad at Colombo. The 212 primary vaccination were  
performed. 63.1% were vaccinated. Generally the vaccination  
is satisfactory, I tried to introduce an ordinance relating to  
vaccination compulsory but was unsuccessful.

### Public Health

1,500 cases were treated in Government hospitals with a  
death rate of 25%.

### Water

400 cases were admitted to hospital. The government side of  
the

the disease was the buccal region due to the chewing of the betel nut.

#### Hookworm

p.13 This campaign continued, the funds are now totally provided by the Colony but the International Health Board provided a director. 1,153,937 treatments were given.

p.19 The conclusions for the future of the control of this disease are interesting in view of the widespread infection and it is considered that educational propaganda and the covering of the whole island by treatments every 12 or 18 months is necessary.

#### p.20 Tuberculosis

The campaign is doing good work. 3,372 cases were treated at the institute in Colombo. A new Sanatorium is being built in the Northern Province.

#### Leprosy

p.21 318 cases were under treatment with various Ethyl Esters and combinations, but the treatment has not been of sufficiently long duration to judge of permanent results. The Medical Superintendent visited India to study the treatment.

#### Yaws

27,957 injections were given. The number of cases admitted into hospitals has decreased, due to the intensive campaign of 8 Itinerating officers.

#### p.22 Sanitation

22 public Latrines were built and 15,000 private latrines were completed and 10,000 under Construction. 31 Sanitary inspectors out of 37 who sat for the examination qualified for appointments. Health classes were instituted for head men. A public health Exhibition was a success. Search for Cholera carrier was undertaken in epidemic work.

The findings of the present study are in line with the findings of the  
past work.

### Conclusion

This research confirms the fact that the relationship between the  
variables is significant. The findings of the present study are in line with the  
past work.

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### References

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### Appendix

The data were collected from the respondents. The findings of the  
present study are in line with the past work. The relationship between the  
variables is significant. The findings of the present study are in line with the  
past work.

### Table

The data were collected from the respondents. The findings of the  
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### Figure

The data were collected from the respondents. The findings of the  
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past work. The relationship between the variables is significant. The findings of the  
present study are in line with the past work.

Water Supplies

These need much improvement, out of 57,878 wells inspected 37,428 were found unprotected and liable to pollution.

Hospitals and dispensaries

p.36 There are 24 Government and 72 Estate hospitals and 540 Government and 690 Estate dispensaries over 2,000,000 patients paid over 3,000,000 visits to the Government institutions.

General Hospital Colombo.

Over 18,000 in patients and 34,000 out patients were treated over 2,500 surgical operations were performed.

37 A new Radiologist was appointed and took over duties; he is a whole time officer.

p.38 Lying in Home

Over 3,500 cases were admitted.

p.38 Infectious disease

The new hospital will be completed and occupied this year.

Neo-Kharviven was tried in 6 cases of plague but found unsatisfactory.

p.43 School inspection

A school inspection officer and nurse have been provided for the northern provinces.

p.50 Estate inspection

There are 3,602 Estates scheduled for medical inspection. Each inspecting officer visited an average of 22 per month. The General health, housing sanitation and child welfare is steadily improving.

Public Health Fellowships.

There are 6 a year; 3 paid for by the International health board and 3 by Government.

p.52 Recommendations

The Committee will wish to endorse the recommendations for provision

Major General  
These are the main points of the report, but as the report is long, it is not possible to give a full account of it. The report is a very important one, and it is hoped that it will be of great value to the Government.

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provision of a medical Research institute which has been asked for many times and the necessary rebuilding of the Medical College.

Bacteriological and Pasteur Institutes

Dr. L. Nichols has published in the Ceylon Journal of Science Medical Section some interesting reports.

Dr. R. I. Spittel and Dr. E. C. Allen publish some interesting cases occurring in their work at the General Hospital Colombo.

(Intro) G. J. Rutherford.

6.1.1927.

1870  
The first of the series of lectures on the history of the  
United States was given on the 1st of January 1870.

LECTURE I. THE DISCOVERY OF AMERICA.

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United States was given on the 1st of January 1870.

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1870

(First Lecture)

1870

DEPARTMENT OF MEDICAL AND  
SANITARY SERVICES.

REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES  
FOR THE YEAR 1925.

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I HAVE the honour to submit the following report on the administration of the institutions of the Department of Medical and Sanitary Services, and on the health and sanitary condition of Ceylon for the year ended December 31, 1925.

SECTION I.—ADMINISTRATIVE.

2. *Staff.*—Director of Medical and Sanitary Services ; Deputy Director of Medical and Sanitary Services ; Assistant Director of Medical Services ; Assistant Director of Sanitary Services ; Office Assistant to the Director of Medical and Sanitary Services ; Director of the Bacteriological and Pasteur Institute ; Malariologist ; 9 Provincial Surgeons ; 4 Medical Superintendents ; 3 Inspecting Medical Officers of Estates ; Radiologist ; Pathologist ; 60 Medical Officers, Grade I., including 3 Lady Doctors ; 205 Medical Officers, Grade II., including 3 Assistant Inspecting Medical Officers and 2 Lady Doctors ; 1 Medical Officer in charge of the Anti-Tuberculosis Institute, Colombo ; 2 Anaesthetists ; 2 Senior Medical Officers of Health ; 13 Medical Officers of Health, 4 in Grade I., and 9 in Grade II. ; 1 Sanitary Engineer ; 1 Sanitary Superintendent ; 3 Supervising Sanitary Inspectors ; 200 Sanitary Inspectors ;

1 Female Medical Practitioner, 380 Apothecaries; 40 European Matrons and Sisters; 86 European Religious Mothers and Sisters in the Nursing Service; 335 Ceylonese Matrons, Nurses, and Pupil Nurses; 1 Hospital Assistant in the Borella Convict Hospital; 40 Hospital Stewards; 9 Inspectors of Vaccination; 139 Male Vaccinators; 12 Female Vaccinators. Office of the Director of Medical and Sanitary Services:—Financial Branch—Accountant, Bookkeeper, Cashier, and 36 Clerks; General Branch:—Chief Clerk in the Special Class of the Clerical Service, and 35 Clerks and 1 Telephone Operator; Civil Medical Stores:—1 Superintendent and Chief Storekeeper; 2 Assistant Superintendents; 1 Opium Storekeeper; 15 Clerks; 31 Opium Clerks and Sellers and approximately 2,750 minor employees in Offices, Stores, Institutes, Hospitals, and Dispensaries, &c.

3. *Promotions, Appointments, &c.*—Consequent on the re-organization of the higher staff of the Medical Department, Dr. J. F. E. Bridger, Principal Civil Medical Officer and Inspector-General of Hospitals, was appointed Director of Medical and Sanitary Services, Visitor of all the Prisons in the Island, and a Justice of the Peace for the Island; Dr. G. Thornton, Deputy Director of Medical and Sanitary Services; Dr. J. C. Cooke, Assistant Director of Medical Services; and Dr. S. T. Gunasekera, Assistant Director of Sanitary Services, with effect from October 1, 1925.

Dr. F. Keyt was promoted to the Grade of Provincial Surgeon. Dr. V. Vaithialingam was promoted from Grade II. to Grade I. Mr. C. J. D. Lanktree, Ceylon Civil Service, was appointed Office Assistant to Director of Medical and Sanitary Services and assumed duties on October 1, 1925. Dr. S. F. Chellappah was appointed Senior Medical Officer of Health. Doctors C. T. Williams, D. L. J. Kahawita, and K. Thambiah were appointed Medical Officers of Health, Grade II. Doctors S. C. de S. Wijeratne, V. Croos Dabrera, and M. de Almeida resigned from the service. Dr. G. W. R. Fernando, Medical Officer of Health, Grade I., died on December 14, 1925, and Dr. C. Punchalingam, Medical Officer, Grade II., died on January 7, 1925.

4. *Officers on Leave.*—The Director of Medical and Sanitary Services was absent on leave from October 16, 1924, to May 29, 1925. Twenty-five Medical Officers were on leave in Europe at the beginning of the year, 26 Medical Officers proceeded to Europe, and 15 returned to the Island during the year.

5. *Financial.*—Revenue and expenditure in 1924–25 :—

EXPENDITURE.			
	Rs.	c.	Rs. c.
Salaries, wages, &c.	3,914,348	70	
Diets	1,436,739	49	
Equipment and contingencies	416,462	14	
Medicines and instruments	812,731	1	
Bacteriological Institute, &c.	28,119	36	
Tuberculosis Institute, Sanatorium, and Hospital	110,428	39	
Transport and travelling	372,795	37	
Rents	50,644	93	
Grants	13,250	0	
Epidemics and prevention of same	97,111	52	
Special equipment	21,324	7	
Incidental expenses	11,040	71	
Rebates payable under the Medical Wants Ordinance	110,300	0	
Purchase of opium and general expenses	133,764	6	
Compensation to Local Bodies for loss in opium revenue	83,902	12	
Cost of Campaign against Anchylostomiasis	92,444	54	
Contribution to the Tropical Diseases Research Fund	1,500	0	
Contribution towards endowment of Central Bureau in London for investigation of Tropical Diseases			1,500 0
Grant in aid to London School of Tropical Medicine			—
Contribution to Sanitary Committee for Colonies and Protectorates			575 75
Grant to British Empire Cancer Campaign			—
<i>Supplementary.</i>			
Purchase of a laboratory motor van for dealing with epidemics			5,220 25
Purchase of an ambulance car			3,000 0
<i>Head 22 b.—Institute of Medical Research.</i>			
Salaries, wages, &c.			43,910 7
Travelling			9,143 17
Anti-malarial Campaign, Trincomalee.			14,759 93
Incidental			13,808 66
			<hr/>
			Total .. 7,798,824 24

REVENUE.			
	Rs.	c.	Rs. c.
Hospital and dispensary receipts	293,123	64	
Sale of drugs and medical requisites	11,335	70	
Sale of drugs under the Medical Wants Ordinance	10,406	46	
Medical aid dues, maintenance, and visits	174,196	48	
Sale of opium			466,257 77
Medical aid dues, export duties			1,046,589 20
			<hr/>
			Total .. 2,001,909 25

The following table shows the total comparative expenditure during the last five years :—

	Rs.	c.		Rs.	c.
1920–21	5,388,791	45	1923–24	7,250,657	20
1921–22	5,633,096	46*	1924–25	7,798,824	24
1922–23	5,524,453	70			

\* Including arrears of salary under the new Salaries Scheme.

SECTION II.—POPULATION : PUBLIC HEALTH.

6. The estimated population of Ceylon on December 31, 1925, inclusive of immigrant coolies, was 5,009,502—10,212 of these were Europeans—an increase of 147,832 and 207, respectively, over the previous year's estimate.

7. *Vital Statistics*.—193,263 births were registered, equivalent to an annual rate of 38·57 per thousand of the population, as compared with 178,866 births and an annual rate of 36·79 per thousand in 1924. 117,545 deaths were registered during the year, 122,959 the previous year; a decrease of 5,414 deaths during the year under review. The death-rate for 1925 was 23·46, and for 1924, 25·29 per thousand.

8. *Causation of Deaths*.—The following table shows the number of deaths registered during the years 1924 and 1925 under the several classes of disease :—

	1924.	1925.		1924.	1925.
I.—General diseases—			V.—Diseases of the digestive system	17,555	17,107
(a) Epidemic diseases ..	8,879	7,793	VI.—Non-venereal diseases of genito-urinary system and annexa ..	1,456	1,594
(b) Septic diseases ..	117	127	VII.—The puerperal state ..	3,417	3,576
(c) Tuberculous diseases ..	3,564	3,525	VIII.—Diseases of the skin and cellular tissues ..	9,537	10,352
(d) Venereal diseases ..	254	202	IX.—Diseases of bones and organs of locomotion ..	25	19
(e) Cancer or malignant diseases ..	473	406	X.—Malformations ..	16	17
(f) Other general diseases ..	8,832	8,621	XI.—Diseases of early infancy ..	8,653	8,448
II.—Diseases of the nervous system and organs of special sense ..	16,011	15,312	XII.—Old age ..	4,553	4,789
III.—Diseases of the circulatory system ..	1,015	1,027	XIII.—Affections produced by external causes ..	2,492	2,562
IV.—Diseases of the respiratory system ..	13,114	11,653	XIV.—Ill-defined diseases ..	22,996	20,415

9. The more notable causes of death were the following diseases :—

	1924.	1925.		1924.	1925.
(1) Dysentery ..	4,080	3,723	(9) Intestinal parasites ..	3,246	3,328
(2) Phthisis ..	3,235	3,241	(10) Puerperal septicaemia ..	1,322	1,372
(3) Infantile convulsions ..	13,899	13,015	(11) Malaria ..	1,388	1,063
(4) Diarrhoea ..	9,026	8,140	(12) Enteric fever ..	816	721
(5) Pneumonia ..	8,339	7,371	(13) Rickets ..	4,078	4,061
(6) Anchylostomiasis and its sequelae ..	1,853	2,119	(14) Tetanus ..	269	292
(7) Dropsy ..	2,580	1,986	(15) Rabies ..	37	31
(8) Anaemia ..	2,692	2,492	(16) Cholera ..	—	189
			(17) Pyrexia ..	17,697	15,707

10. *Infantile Mortality*.—The infant mortality rate in the 33 principal towns of the Island was 216 per thousand, as against 235 the previous year, 258 in 1923, and 240 in 1922—an increase from 1922 to 1923 and a gradual fall from 1923 to 1925 due probably to the activities of Child-Welfare Associations, the establishment of crèches in principal towns and on estates, and the teaching of mother-craft in the training schools for pupil teachers. 13,015 deaths from infantile convulsions were registered during the year—18·90 per cent. of the total number of deaths registered. The corresponding figures for the previous year were 13,899 and 11·3 per cent. respectively. In the ante-natal clinic attached to the De Soysa Lying-in Home, Colombo, advice was given to 707 expectant mothers, who paid 713 visits during the year, as against 335 and 343 respectively previous year, and 319 and 326 respectively in 1923. 55 midwives were trained at the Lying-in Home, Colombo, in 1925, as against 57 in 1924.

11. *Vital Statistics on Estates*.—23,431 births and 19,643 deaths were reported from estates, as against 21,944 births and 18,770 deaths in 1924, and 26,921 births and 17,551 deaths in 1923. The birth-rate per thousand per annum calculated on the estimated estate population on December 31, 1925, was 38·2, and the death-rate, 32·03 for the year, as against 41 and 35 in the previous year, and 57 and 28 in 1923.

The following table shows the principal causes of death on estates :—

	1924.	1925.		1924.	1925.
(1) Dysentery ..	2,402	2,470	(6) Infantile convulsions ..	1,636	1,386
(2) Debility ..	4,050	3,517	(7) Dropsy ..	137	137
(3) Diarrhoea ..	1,495	1,442	(8) Phthisis ..	317	320
(4) Pneumonia ..	2,990	2,454	(9) Other diseases ..	6,275	6,390
(5) Anchylostomiasis ..	1,240	1,501			

12A. Malaria shows a marked decrease as regards hospital admissions and cases treated at dispensaries and hospital out-patient departments, as compared with the numbers for the previous two years.

22,600 hospital admissions and 785,903 dispensary cases were recorded during the year, as against 26,856 and 925,476 respectively in 1924, and 34,522 and 1,193,225 respectively in 1923. 1,063 deaths from malaria were registered in 1925, 1,388 in 1924, and 2,118 in 1923, but 15,707 deaths in 1925, 17,697 deaths in 1924, and 23,328 deaths in 1923 were registered under “pyrexia of unknown origin,” and many of these were probably due to malaria.

The following table shows the hospital admissions in the different provinces and total dispensary cases for the last 3 years :—

Hospital Admissions:—	<i>Malaria.</i>					
	1923.		1924.		1925.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo ..	2,280	15	2,677	21	2,041	27
Western Province ..	6,062	87	2,984	60	2,429	38
Central Province ..	5,887	107	3,268	44	2,215	38
Northern Province ..	2,158	19	2,634	57	2,630	33
Eastern Province ..	867	11	1,903	45	1,480	30
Southern Province ..	1,911	35	2,223	34	1,793	24
North-Western Province ..	3,201	76	2,394	83	2,396	85
North-Central Province ..	2,603	68	2,102	54	2,215	45
Province of Uva ..	3,111	66	2,422	41	2,132	25
Province of Sabaragamuwa ..	5,087	76	3,018	54	2,424	35
Railway Extensions ..	1,355	8	1,240	11	845	12
Total ..	34,522	568	26,865	504	22,600	392
Dispensary cases ..	1,193,225		925,476		785,903	

Quinine to the value of Rs. 223,194 was issued free for preventive and curative purposes during the year. It was distributed by itinerating apothecaries and vaccinators on fever duty and by headmen through the Government Agents during the fever seasons. The cost of the quinine issued free in 1924 was Rs. 303,050.

Report of the Malariologist, Mr. H. F. Carter, for the year :—

*Staff.*—The Malariologist, 4 Medical Officers (Drs. K. J. Rustomjee, E. T. Saravanamuttu, W. H. Schokman, and W. L. P. Dassanayake), 8 entomological assistants, 1 laboratory assistant, 1 laboratory attendant, 1 clerk (Class III.), 1 peon, and 4 coolies.

In March, 1925, Dr. J. Pedris was transferred to this Department from the medical branch of the service.

*Distribution of Staff.*—The Malariologist, 2 Medical Officers, the laboratory assistant, the laboratory attendant, and the clerk were attached to the Colombo office.

In March, 1925, Dr. W. L. P. Dassanayake took over the control of the Anti-malaria Campaign at Trincomalee, relieving Dr. W. H. Schokman, who was transferred to Anuradhapura in charge of the campaign in that town. Dr. K. J. Rustomjee left for America in July 1925, having been granted a scholarship by the International Health Board, Rockefeller Foundation. On the completion of minor initial control measures at Trincomalee in August, 1925, Dr. W. L. P. Dassanayake proceeded to Colombo, and shortly afterwards left for Europe.

Entomological Assistants, S. S. L. Casiechetty and S. R. de Silva reverted to the Sanitary Branch, from which they had been seconded for training in malaria work in September and October, 1925, respectively.

*Education.*—Propaganda work in connection with the anti-malaria campaigns at Anuradhapura and Trincomalee was continued; and a further course of lectures and demonstrations on malaria and its control was given during August and September to the Training Class for Sanitary Inspectors held by the Sanitary Branch of the Department.

*Visit by Members of the International Health Board.*—Towards the close of the year, Drs. M. E. Barnes and Paul F. Russell, representing the above organization, visited Ceylon with a view to collaborating with Government in the determination of a policy for the institution of progressive, preventive, and control measures. These gentlemen remained in the Island from October 1 to November 21, and during this period undertook an extensive series of tours in order to view the conditions existing in various parts of the country in their relation to the distribution of malaria. The Malariologist accompanied Drs. Barnes and Russell on all these tours, which included portions of every province, and were as follows :—

- (1) To Mirigama, Giriulla, and Gampaha (October 9 to 11).
- (2) To Ambepussa, Kandy, Anuradhapura, Horowapotana, and Trincomalee (October 13 to 16).
- (3) To Badulla, Hatton, and Norton (October 20 to 24).
- (4) To Kurunegala and Chilaw (October 28 to 30).
- (5) To Mahara Prison (November 2).
- (6) To Jaffna, Chavakachcheri, Elephant Pass, Mullaittivu, and Vavuniya (November 3 to 7).
- (7) To Tissamaharama, Hambantota, and Matara (November 14 to 16).

*Larvivorous Fish.*—The attempt to utilize larvivorous fish as a mosquito control measure in certain towns situated in the dry zone has already been explained in previous reports. The various nurseries established have been maintained, and increased distribution of the fish has taken place.

*Malaria Control Measures.*—The campaigns at Mahara Prison and Trincomalee have, so far as initial works of a permanent and minor nature are concerned, been largely completed during the course of the year. At Trincomalee, however, major works in connection with the extensive flood area in the Uppeveli division, and improvement of the general drainage system of the town are necessary before permanent control of certain situations can be obtained. Maintenance work at both places is of the utmost importance, and must be undertaken systematically and with careful regard to detail. At Mahara precautions will be necessary in connection with the opening of the new quarries in the immediate vicinity of the prison and also with the closing of the old quarries. Before the latter are finally abandoned, it is essential that all permanent measures be completed, and that the working areas of the quarries be levelled and drained. The campaign at Anuradhapura was placed under the direction of Dr. W. H. Schokman in March, 1925, and has been vigorously continued. The chief work at this town during the year has been the reconstruction of a stream called the Halpan-ela according to the proposals made by the Divisional Irrigation Engineer, who has given much valuable advice and assistance in connection with its execution.

*Anti-Malaria Campaign, Mahara Prison.*—During the year the control measures referred to in previous reports have been largely completed, and maintenance work has been systematically performed by a brigade of prisoners under the supervision of the Superintendent and the Resident Medical Officer. The number of cases treated in the hospital have continued to decrease, the average morbidity rate per month being 4.6 (with extremes of 2.7 and 5.7 per cent. as compared with 7.5 per cent. in 1924 and 29.4 per cent. in 1923).

The returns for the hospital during the past seven years are shown in the following table :—

Mahara Prison Hospital Returns, 1919–1925.											
General.						Malaria.					
Year.	Average Daily Strength of Jail.	Total Cases treated.	Average Daily Sick. Per Cent.	Death-rate. Per Cent.	Cases treated.	Death-rate. Per Cent.					
1919	1,031·4	4,421	10·9	10·7	800	1·0					
1920	1,085·1	4,495	8·6	3·3	1,462	1·2					
1921	1,102·6	5,265	9·8	8·2	1,711	2·4					
1922	796·9	5,767	11·9	4·4	3,377	2·5					
1923	671·8	4,002	10·2	1·3	2,032	0·3					
1924	740·1	2,740	8·3	1·2	712	0·1					
1925	675·5	1,527	5·1	1·9	387	—					

*Anti-Malaria Campaign, Anuradhapura.*—In March, 1925, Dr. W. H. Schokman was appointed Medical Officer in charge of this campaign, and was assisted by Entomological Assistants E. A. M. Karunaratne and J. L. N. Fernando ; and a bungalow was rented for use as an office and laboratory in place of the room in the Government Hospital previously used for this purpose. From March onwards the main labour force was engaged upon the major work of reconstructing the Halpan-ela, a stream which flows for a distance of nearly three miles through the town area and which is of primary importance in relation to drainage and removal of waste irrigation water, while subsidiary forces have been maintaining the works previously performed and oiling.

A considerable number of additional coolies were employed in connection with the reconstruction of the Halpan-ela. Preliminary work on the ela was performed by the convict brigade, but in order to expedite it and especially to obtain some alleviation of existing conditions before the onset of the north-east monsoon rains, an increased force was essential. The strength of this force fluctuated, but from its employment in July until the end of the year, it maintained an average of approximately 100 coolies. The labour force engaged in the campaign at the end of 1925 was as follows :—

- (a) Prison Labour-maximum strength—42 convicts.
- (b) Oiling Brigade—5 coolies and 1 kangany.
- (c) Maintenance Brigade—20 coolies and 1 kangany.
- (d) Halpan-ela Force—average strength approximately, 100 coolies, and 4 kanganies.

Two overseers were also engaged, one being associated with the oiling and maintenance brigades, and the other with the Halpan-ela force.

The local authorities voted a further sum of Rs. 2,000 for work in connection with the campaign and in addition in July, 1925, Government sanctioned the allocation of Rs. 7,000 from the vote under Head 37. Medical Research, sub-head 4. Incidental of the estimates for the extended work on the Halpan-ela.

The works in the central portion of the town, excluding those on the Halpan-ela which are dealt with separately, were continued and may be summarized as follows :—

Nature of Work.	1925.
Extent of jungle and low shrub cleared (acres)	20
Contents of pits, swamps, &c. filled ( cubic feet)	74,242
Contents of earth drains and irrigation channels cleared, drained, and regraded (cubic feet)	47,564
Contents of new drains cut (cubic feet)	22,842
Situations oiled (average per month)	555

The fish nursery in the reservation of the “ drinking ” pokuna has been maintained in good order, and distribution to wells and temporary pools has taken place. Unfortunately, the majority of the wells in this town appear to contain the carnivorous fish “ Lula ” (*Ophiocephalus striatus*), and in many instances it has been necessary to pump dry and thoroughly clean the wells before introducing “ Millions.”

Maintenance of the control measures previously completed was performed, so far as was possible during 1923 and 1924 by detachments from the labour force available, but early in 1925 it was found necessary, if such work was to be done thoroughly and systematically, to engage a special gang of coolies. At first this gang consisted of nine coolies under a kangany, but later its strength was increased to twenty. Arrangements were made with a view to the entire area being inspected and maintained at fortnight intervals after the initial round had been accomplished. The latter occupied a period of nearly three months. but subsequently fortnightly rounds became possible, and at present only ten days are necessary for the work. Such short intervals, however, are no longer required, and were it not that the newly completed works on the Halpan-ela will shortly demand considerable attention during their consolidation, the force could be reduced in numbers. In the circumstances, however, the gang has been retained at full strength, and when not required for its legitimate purpose is employed on new initial measures. The work of this brigade consisted mainly of reducing undergrowth, clearing weeds, silt, and rubbish from water-courses, and from ponds, swamps and burrow-pits preparatory to oiling, and raising the level of fillings where sinkage had occurred. In addition they carried out a number of new works including the drainage or filling (2,517 cubic feet) of pools, the cutting of portions of the Halpan-ela (1,195 cubic feet), and the clearance of jungle (33,000 square feet).

*Halpan-ela.*—This stream is approximately three miles in length, and is contained almost entirely within the town limits, passing in its central portion through a relatively thickly populated area. There can be no question that normally it should serve as an important drain for a large section of the town situated on the western side of the river, and that it should not only alleviate flooding during the rainy season but should act as the chief outlet for waste irrigation water from a considerable area throughout the year. Its condition, prior to reconstruction work, however, was such that drainage was entirely prevented, and a serious menace to the health of the community was produced. It was, in fact, no longer a stream, but an extensive series of, more or less, isolated swamps and pools, bordered in many places by low marshy areas which, owing to the continual accession of water from the paddy fields and irrigation channels, persisted, even during the dry season. In several places owing to encroachment the original course of the stream

was entirely obliterated by blocks of paddy fields. Mosquito surveys of the *ela* showed that in this condition it was a prolific breeding place of *Anopheles*, and that larvae of efficient malaria-carrying species were abundant in certain situations along its course. The stream had evidently been entirely neglected for many years, but the main causes of the conditions indicated above appeared to be :

- (1) The insufficient capacity of certain culverts and anicuts, especially those at the Ellakatuwa, Trincomalee road, and Outer Circular road.
- (2) The destruction or blockage of the stream bed by (a) natural obstructions, *e.g.*, jungle and aquatic growths, fallen trees, siltage, scouring, and collapse of the banks, and (b) artificial obstructions, *e.g.*, conversion of portions of the bed into paddy fields and the erection of dams to provide pools for domestic and irrigation purposes.

The proposal that the stream bed be reconstructed was placed before Government and the local authorities, and subsequent to the completion of a survey and the determination of levels, the Divisional Irrigation Engineer submitted a scheme for the work. There were no apparent difficulties from an engineering point of view, but it was considered necessary to construct a 10-foot channel throughout draining to the river in three tracts by subsidiary channels as follows :—

*Tract I.*—Ellakatuwa Junction to Dickson Road Bridge (A to G). The channel to be graded to ensure a flow from the commencement (A) to the river (at K) *viâ* the loop in the neighbourhood of the bridge (B.H.G) and a subsidiary channel (H.K).

*Tract II.*—Dickson Road bridge to Trincomalee road (G to C). The channel to run from the bridge to the river *viâ* a subsidiary channel (X.Y.) ; the original course from the commencement of the latter (X) to the road (C)—which had been converted into paddy fields and was considerably below the level of the adjoining sections to remain unaltered.

*Tract III.*—North of Trincomalee road (1) from the road to the river by a subsidiary channel (D.M), situated a few hundred yards north of the junction with the Outer Circular road. (2) From a point (E) near the northernmost bend (F) of the *ela*, southwards to the river *viâ* the same subsidiary channel (D.M) ; and (3) from the same bend (F) eastwards to the river (at O).

This scheme was adopted, but considerable portions of the land involved—particularly the subsidiary channels X.Y. and D.M.—were privately owned or held on “ tickets of occupancy ” and permission of the owners or cancellation of the leases was necessary before work in such areas could be commenced. Originally, with a view to reducing expenditure under this item as much as possible, it was proposed that the greater part of the work should be performed by prison labour, but the force available would not have been able to complete it within a reasonable period or before the advent of the rainy season of 1925 to 1926, and accordingly a number of coolies were engaged. As stated previously, a considerable amount of preliminary work had been carried out in tract III. by the convict brigade during the period, April to October, 1924, pending the results of the surveys by the Survey and Irrigation Departments, but it was not possible to commence work according to the scheme proposed until early in the dry season of 1925. It was decided to begin work in tract I., and clearance of jungle from the banks and reservations of the *ela* was performed by the convict brigade during March, 1925 ; actual cutting of the channel was commenced in April from the junction with the river at K, and was pushed vigorously although interrupted by floods on one or two occasions.

*Tract I. Section H.—K.*—The *ela* in this section was confined to a winding hollow, about thirty feet wide, and formed a narrow sluggish stream of varying width obstructed in numerous places by branches of trees, twigs, and leaves, and roots of large “ Kumbuk ” trees growing on the banks. The edges were very irregular, overgrowing with low vegetation, and in many places undermined by scouring ; the bed was uneven, pot-holes were abundant, and not infrequently the stream was divided by sandbanks or accumulation of silt. The channel was cut as straight as possible through the great bed of silt in the ravine, and to conserve labour was restricted mainly to the original bed ; entirely new cuttings often of considerable depth were, however, sometimes necessary. The banks were sloped at an angle of 45, and were cleared of vegetation, and built up and levelled over a width of approximately 12 or 15 feet on each side. Bends or places which were liable to scour were strengthened whenever possible with boulders or stones or were in a few instances experimentally turfed. The original length of the *ela* in this section was 1,600 feet, and the length of the new channel 1,120 feet, the reduction of 480 feet being effected by the elimination of bends ; an area of approximately 18,000 square feet was cleared of jungle in this section.

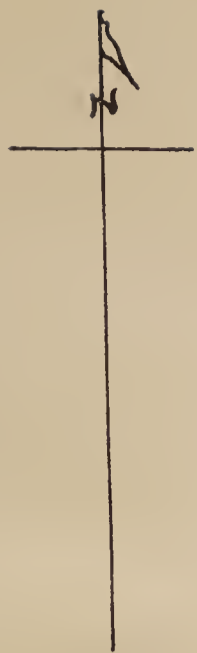
*Section G.—H.*—The course of the *ela* in this section was almost obliterated being practically lost in an extensive swampy area—some 80 or 100 yards wide—caused by seepage and drainage from adjoining high level paddy lands. After the preliminary work of clearing the dense growth of vegetation which choked the stream, and of removing obstacles, the channel was recut and graded down to point H. The banks were rebuilt, and the adjoining marshy areas filled and levelled. The length of the new channel was 822 feet.

*Section B.—H.*—Little or no jungle clearing was necessary in this section as the stream passed through cultivated lands. Cutting was commenced at point H, and continued to point B ; a new channel involving a considerable amount of excavation work was constructed near bent H, in order to eliminate an extensive bend in the original course. The old channel was then filled and the surrounding area levelled. The length of the cutting in this section was approximately 450 feet.

*Section G.—B.*—This portion of the *ela* was somewhat similar in character to Section G—H, but included a large permanent pool in which waste irrigation water accumulated. The soil in this area was soft and wet, and was penetrated in many places by roots of kumbuk trees, the removal of which proved a difficult and laborious matter. The building of the banks and the filling of the upper part of the pool and of a low-lying area situated near the bridge at G was done either with the soil removed by excavating or obtained from high lands in the immediate vicinity. The length of channel cut in this section was 1,056 feet.

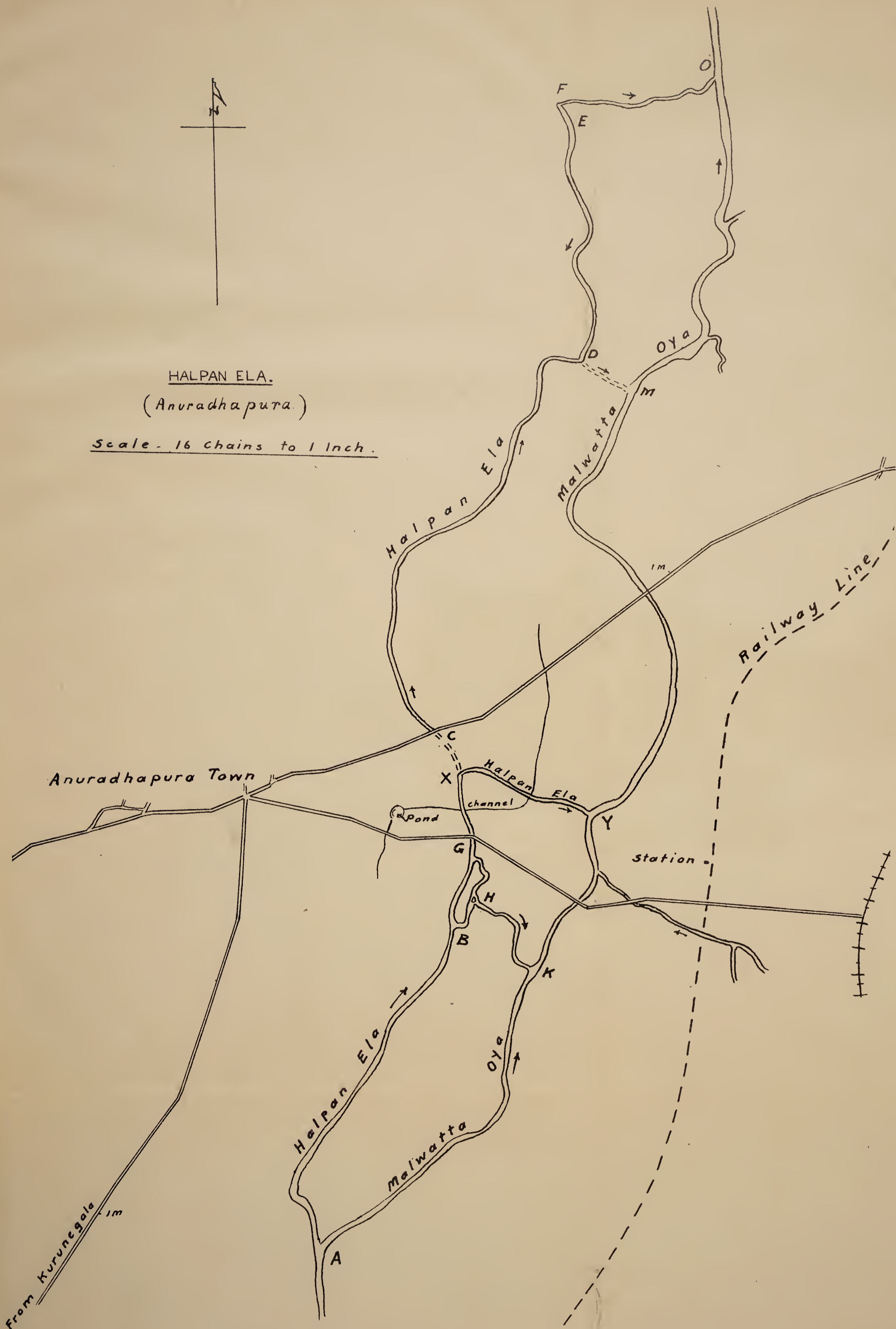
*Section B.—A.*—The neighbourhood of the *ela* in this section is very sparsely populated, and the stream itself passes through dense jungle which, however, on the western side is rapidly replaced by paddy fields. The work in this portion is not completed as attention was given in the first place to sections of greater importance. Reconstruction has now been commenced near point B, where a large pool was present. This pool has been partially drained in the process and will subsequently be obliterated where necessary by filling.

*Tract II.*—This portion of the *ela* extends from the bridge at Dickson road (G) to the Trincomalee road (C), and near its centre (X) gives rise to a subsidiary channel which enters the river at Y. The course of the original channel in the area X—C was entirely obliterated by reason of its conversion into paddy fields ; and owing chiefly to the low level of these fields and the excessive amount of filling and buildings which would have been required, and to the fact that its reconstruction here was not considered essential to the



HALPAN ELA.  
(Anuradhapura.)

Scale - 16 chains to 1 Inch.





scheme, the portion was left untouched. The whole of the tract G-X-Y was in an appalling condition being completely overgrown and choked with rank vegetation, and containing many natural and artificial obstructions; waste irrigation water was continually pouring into it and was largely retained, producing a marshy area which extended far beyond the confines of the channel proper. Cutting was commenced at the junction with the river (Y) after the jungle and undergrowth present in this portion had been cleared, and was continued upwards towards point X. In places where paddy was being cultivated in the bed of the stream the work was delayed until the crop had been reaped, but thereafter was vigorously pushed forward and linked with the adjoining portions. The work in this tract was of a tedious nature owing to the soft and often semifluid nature of the soil; the coolies frequently had to work in deep mud and great difficulty was experienced in building up the sides of the channel. The level pegs in this area were inserted under the direct supervision of the Divisional Irrigation Engineer who prescribed the course to be followed. The length of the cutting was 2,371 feet.

*Tract III.*—This tract extends for a distance of over two miles northwards from the Trincomalee road. From the latter point (C) to the neighbourhood of the subsidiary channel D-M, it passes through inhabited areas and is associated with gardens (coconuts and plantains) paddy fields, and portions of the archaeological reserves. Further north from D few habitations occur and the area is almost entirely occupied by paddy fields; the whole of this portion is low-lying, and it is doubtful whether any useful purpose would be served by extending the work of reconstruction to the river at point O. For the present it is not proposed to perform any works in these sections (E-D and F-O).

The preliminary works done during 1924, in sections C-D and D-M of this tract have already been mentioned. They have proved satisfactory, and additional work in connection with the levels supplied subsequently has been reduced to a minimum. Deepening and rebuilding of the banks was performed where necessary, and commencing at the point C was extended to the vicinity of the Government Hospital (situated near the middle of the Section C-D) at the close of the year.

The following table gives an approximate summary of the amount of work, other than that of clearing undergrowth and jungle, done in connection with the reconstruction of the ela during 1925 :—

Halpan-Ela Works, 1925.

Tract.	Length of cutting (feet).		Excavations (cubic feet).		Fillings (cubic feet).	
Tract I.						
Sections H-K	..	1,120	..	53,680	..	48,670
Sections G-H	..	822	..	24,500	..	13,980
Sections B-H	..	450	..	25,970	..	27,450
Sections G-B	..	1,056	..	47,310	..	38,190
Sections B-A*	..	98	..	6,290	..	8,640
Tract II.	..	2,371	..	103,580	..	83,270
Tract III.	..	2,000	..	4,590	..	3,960
		7,917		265,920		224,160

\* Not completed.

The ela as reconstructed is an earth channel, and it would not be feasible financially to construct it on a more permanent basis. It will, therefore, require a considerable amount of maintenance during the earlier years if it is to function properly, and this work should include not only the care of the bed and banks by the suppression of vegetation, removal of obstructions, and elimination of irregularities, but also the strengthening of weak points where scouring is liable to occur. If such work is performed conscientiously from the beginning, the amount of maintenance necessary should decrease rapidly within a few years. The rains and floods of the recent north-east monsoon (November to January, 1925-1926) were less pronounced than usual, but were nevertheless quite considerable; and it was gratifying to find that the new works resisted them satisfactorily, and that the repairs necessary were of a very minor nature. The immediate results of the work in regard to the reclamation of extensive swampy areas and pools, and the elimination of seepage and drainage from the adjoining paddy fields is already very apparent, and there is reason to believe that the period of the annual flooding of tract II. was also materially decreased by its action.

*Anti-Malaria Campaign, Trincomalee.*—The staff and labour force employed in connection with this campaign were similar to those of the previous year, the only change of importance being the transfer of Dr. Schokman to Anuradhapura in March, and the appointment of Dr. Dassanayake to Trincomalee.

Minor initial works involving the elimination of treatment of pools and burrow-pits, the drainage of certain low-lying areas, the removal of undergrowth and brushwood in the neighbourhood of dwellings, and similar measures were continued and extended; and the cleaning and distribution of larvivorous fish to wells, and oiling of Anopheles breeding places which could not be otherwise controlled at the time were also maintained. As in the previous year the main work was the elimination of burrow-pits and pools, which in this district are known to form favourable breeding places of the important malaria-carrying species. *A : Culicifacies.* These were very numerous especially in the plantations and larger gardens, and were often deep and extensive; they were treated by partial filling, grading, and draining, and it is estimated that during the course of the campaign from 800 to 1,000 were thus obliterated as breeding places.

All initial works within the town area proper were completed in August, 1925, and from September 1, the continuance of the campaign was undertaken by the local authorities under the supervision of Dr. Schokman, who visited Trincomalee from Anuradhapura once every month for inspection and advisory purposes. The attention of the local authorities had previously been invited to the great importance of maintenance works in connection with malaria control measures, and to the necessity of a definite organization, under a trained and competent inspector, being formed for the purpose. It was further intimated that, the greater portion of the town being privately owned, the cost of such work would depend largely upon the extent to which landowners could be prevailed upon to maintain the measures carried out on their property as failing their co-operation it would be necessary, especially during the wet season, for the requisite works to be performed by the local organization. In this connection it is of primary importance that the promiscuous digging of burrow-pits within the town limits be entirely stopped, and that to attain this end the utmost vigilance and care be exercised, and enactments relative to the matter be vigorously enforced.

Material for building and similar purposes can be obtained without difficulty from high land at Trincomalee, but constant supervision will be necessary to ensure that this is done. Too often during the campaign it happened not only that newly cut pits were discovered after brief intervals in recently completed areas, but that excavations had actually been made in the relatively loose fillings of freshly treated pits. Restrictions must also be placed upon the construction of private wells within the town, and all wells not in constant use should be condemned and closed by the owner or local authorities without delay.

Control measures of the nature referred to above were performed during the year in divisions Nos. 7–11. Their approximate extent is indicated in the following summary, which, however, does not include maintenance works, the regrading and rebuilding of existing drains, or the levelling of depressions where filling material was available in the vicinity and could be transported by hand.

Extent of jungle and low shrub cleared	..	14 acres
Contents of pools and pits filled (60 large and numerous small)	.. ..	221,240 cubic feet
Contents of new drains cut	.. ..	10,636 cubic feet
Wells cleaned and stocked with fish	.. ..	395

Control measures were confined to the southern section (bordering Divisions Nos. 9, 7, and 10) of division No. 11, as the physical conditions in this extensive, but sparsely populated, section are such that major works will be required if permanent improvement is to be obtained. A considerable amount of permanent work was nevertheless performed in the area closest to the town proper, and elsewhere in the division control was obtained by oiling. No measure, other than oiling, were carried out in division No. 12, as apart from a relatively small area in the south-east adjoining the sea, this section is largely covered with dense jungle and is practically uninhabited. It would be impracticable, even if necessary to attempt any general control measures of a permanent nature in this division at present.

Oiling was performed by a special brigade independently of the work of the main labour force, and was done in all parts of the local board area (except the jungle-clad portion of division No. 12) where breeding places existed, and also in the lands adjoining the southern limits of the town. As the permanent works extended, the number of situations requiring oiling decreased, and the only areas in which extensive oiling will in future be necessary are the flood areas of Uppeveli (division No. 11), the south-eastern portion of division No. 12, and the pools and quarry pits in the lands (Admiralty Flats and Maniaveli) bordering the southern sections of the town.

The nursery for larvivorous fish has been maintained and is in good condition with abundant supplies of “Millions.” Distribution of the fish to wells, after cleaning, has been continued, and all the wells in the town (795) have now been treated in this manner. In several of the wells the fish have increased so greatly in numbers as to provide subsidiary nurseries, but in others fresh supplies have to be introduced every few months. During the cholera epidemic in April, 1925, many of the wells in the infected area were disinfected and the fish killed. Later, however, these wells were restocked from the nursery. Regular monthly inspections of the wells are necessary to ensure that the fish are maintaining control, and to ascertain when further distributions are required. Additional supplies should be introduced whenever positive evidence of the presence of fish is lacking; as it is often—especially in the deeper wells—extremely difficult to determine whether the fish are actually absent.

With a view to obtaining evidence on the control action exercised by “Millions” in wells at Trincomalee, a series of examinations similar to those made in the previous year in regard to the prevalence of *Anopheles* larvae in unstocked, used and disused wells was made. The wells examined were the same as those observed in 1924, but the work was commenced earlier and was continued for a longer period.

Fish Control of *Anopheles* in Wells, Trincomalee.

Condition of Wells.	Number under Observation.	Without “Millions” 1924.				With “Millions” 1925.			
		Number of Examinations.	Examinations positive (per cent.)	Larval rate per 100 Samples.		Number of Examinations.	Examinations positive. (per cent.)	Larval rate per 100 Samples.	
Used	.. 40	.. 160	.. 14·4	.. 8·1		.. 228	.. 3·5	.. 2·7	
Disused	.. 30	.. 117	.. 26·5	.. 31·8		.. 167	.. 6·0	.. 3·0	

Since, so far as was observable, no important differences existed in regard to the conditions of these wells in 1924 and 1925, it would seem that the introduction of the fish has had a very definite effect upon the breeding of *Anopheles*. In both the used and disused wells *Anopheles* larvae were found approximately four times less frequently than when the fish were absent; and, moreover, when found they were always scanty, the larval rates per 100 samples being reduced by approximately 66 per cent. in the case of used wells, and 90 per cent. in disused wells.

Spleen examinations of school children and adults made in July showed that the rates obtaining were very definitely lower than at any time during the previous two years. Of 362 school children examined, enlarged spleens occurred in 27 or 7·4 per cent., and of 338 adults enlargement was observed in 7 or 2·1 per cent. The gross results obtained at the various examinations of children made since 1921 are as follows :—

Spleen Rates, Trincomalee Children, 1921-1925.

Date of Examination.		School Examinations.			Town Examinations.		
		Number examined.	Spleen Rate.		Number examined.	Spleen Rate.	
November	1921	.. 289	.. 4·8	..	—	..	—
April	1923	.. 178	.. 37·6	..	—	..	—
September	1923	.. 647	.. 13·7	..	1,331	.. 14·1	
June	1924	.. 391	.. 43·9	..	331	.. 45·7	
September	1924	.. —	.. —	..	594	.. 16·4	
July	1925	.. 380	.. 7·4	..	—	..	—

In September, 1923, the average adult spleen rate for the town was 5·9.

Mention of the fluctuations in the spleen rates at Trincomalee was made in the report for last year, and attention was directed to the relatively rapid decrease which occurred between June and September in 1923 and 1924. In both these years the rates in the resident children in June (the latter part of the epidemic period) were high—37·6 per cent. and 43·9 per cent., whereas in September they had decreased considerably being approximately 14·0 per cent. and 16·4 per cent. No examinations were made in July of these years, but presuming a uniform rate of decrease from June to September, the spleen rates in this month would have been in the neighbourhood of 30 per cent. The results obtained in July of the present year would thus appear to be very favourable, and to indicate that a substantial reduction has taken place; but to what extent the campaign has been responsible for this cannot yet be estimated since climatic conditions were scarcely normal and the rainfall of the north-east monsoon period of 1924–1925 was less heavy than usual. The hospital statistics also show a marked decrease in the incidence of malaria cases during the year, but afford no index of malaria in the controlled area as they include large number of cases from the surrounding and more highly endemic districts. It is proposed to undertake extensive spleen and blood examinations in June, 1926, with a view to obtaining further and more detailed evidence on the effect of the control measures.

*Reports.*—During the year the following reports were submitted to Government :—

1. Annual report for the year 1924.
2. On malaria in the Chilaw District.
3. On malaria infection in rice-growing districts.
4. Interim report on the anti-malaria campaign, Anuradhapura.
5. On “ Kataragama Fever ” its nature, causes, and control. (Sessional Paper XXXVII., 1925.)

12B. *Filariasis.*—In 1912 Dr. P. H. Manson Bahr made a rapid survey of the whole Island of Ceylon with regard to the incidence of filariasis. He examined in all about 3,000 slides and reported the following salient points :—

- (a) The heaviest infection was found in the Southern and Eastern Provinces.
- (b) The type of parasite found was the *Microfilaria Bancrofti*.
- (c) The parasite is a nocturnal one.

He indicated that further and more detailed work was required in the matter.

In the latter part of 1925 it was arranged with Dr. Sweet, Director of the Anchylostomiasis Campaign, that a further examination of the question should be undertaken and under his control, Dr. Dirckze carried out the necessary investigations. A report from Dr. Sweet and tabulated results of a survey supplied by Dr. Dirckze are given below :—

Dr. Sweet's report to the Director of Medical and Sanitary Services is as follows :—

This survey was made according to plans which I drew up, following a conversation with you in November of last year. You will remember that it was decided then that a rapid survey should be made to determine the extent of filariasis in the Southern Province, the survey to cover only the examination of blood slides taken at night and the recording of instances of elephantiasis. On account of the short time available for the work, no investigations as to the insect carrier of the disease were to be made.

Dr. Dirckze's tabulated results cover the important points in the results of the survey. You will note that the heaviest infection with filariasis was found in certain villages of the Tangalla area of the province. There was also a considerable infection in the residents of Galle town. The distribution of infection was very patchy throughout the Province, a fact noted by Dr. Manson Bahr during his survey. The incidence of elephantiasis correspond roughly to that of filariasis, although only one or two persons with the former condition presented any microfilariae in their blood.

Reports from Government hospitals and dispensaries are appended giving the number of cases of elephantiasis seen during the time the survey was in progress. The Government Agent kindly promised to obtain a report on this point from the Police Vidanes of the Province; this report has not come to hand as yet, but will be sent to you when it arrives. The three reports from our survey from the hospitals and dispensaries and from the headmen should give a fairly accurate idea of the amount of elephantiasis actually existing at the present time.

I asked Dr. Dirckze to include in his report such information as he could obtain as to hydrocele. While making a filariasis survey in Australia, I found that the medical men of Brisbane regarded the high incidence of hydrocele operations in the General Hospital there as due to the filariasis common in the city. There is no clear evidence existing which would connect hydrocele and filariasis, but I thought it might be interesting to collect this information so that more investigations might be made.

The survey here reported is of value as far as it goes. It gives a fairly definite idea of the distribution of filariasis in the Southern Province, and will make any future work much easier as the infected areas will have been determined. The questions of the insect carrier of the infection and the feasibility of methods for its control remain to be determined. Nothing specific in the way of measures for the control of the disease can be attempted until the first question is answered, an interesting research problem which would probably be of practical importance.

Dr. Dirckze reports that there is an impression amongst the people of the Southern Province that the incidence of elephantiasis is decreasing. This may be true of elephantiasis, but if it were true of filariasis it would be difficult to explain. On theoretical grounds, it seems probable that, in general, the latter condition will increase in incidence with a growing population, until specific measures are instituted against the domestic mosquitoes almost surely responsible for the spread of the infection.

In closing, I wish to express my thanks to Dr. H. A. Dirckze and to his two assistants, Messrs. L. Baptiste and M. B. Kahawatte of the staff of the Anchylostomiasis Campaign. Filariasis surveys under the best of conditions are difficult to make, and the fact that this survey was completed in so short a time and under such difficult conditions speaks well indeed for the energy and determination of the men concerned.

Table I.—Record of Results of Blood Examinations made and of Cases of Elephantiasis recorded during a Filariasis Survey of the Southern Province, November 16, 1925, to January 15, 1926.

Name of Village.		Number examined.	Number infected.	Percentage.	Number with Elephantiasis.	Percentage.	Number with Hydrocele.
1.	Galle Town	605	35	5.78	7	1.15	4
2.	Galle District :—						
	A.—Hikkaduwa—						
	(a) Hikkaduwa West	71	4	5.63	—	—	—
	(b) Wawlagoda	72	3	4.17	—	—	1
	(c) Wewala	54	—	—	3	5.56	—
	B.—Dodanduwa—						
	(a) Ratgama	57	2	3.51	—	—	2
	(b) Moderapatuwata	50	—	—	1	2	—
	C.—Katudampe	95	3	3.16	—	—	—
	D.—Imbula	55	3	5.45	2	3.64	—
	E.—Imaduwa—						
	(a) Kodagoda	32	—	—	—	—	—
	(b) Horadugoda	66	—	—	—	—	—
	(c) Paragoda	48	1	2.08	—	—	—
	(d) Imaduwa	43	1	2.33	3	7	—
	F.—Dorape	63	1	1.6	—	—	—
	G.—Baddegama	65	—	—	—	—	—
	H.—Wanduramba—						
	(a) Lelwala Ihala	60	—	—	—	—	1
	(b) Wanduramba	60	—	—	—	—	2
	I.—Nawadagala	200	—	—	1	0.5	—
	J.—Elpitiya	102	1	0.98	—	—	—
	Total for Galle District	1,193	19	1.59	10	0.83	6
3.	Matara District :—						
	A.—Akuressa	64	1	1.56	—	—	1
	B.—Poramba	42	—	—	—	—	—
	C.—Kamburupitiya	123	1	0.81	2	1.62	3
	D.—Hakmana	143	1	0.7	—	—	—
	E.—Tihagoda	194	5	2.58	—	—	3
	Total for Matara District	566	8	1.41	2	0.35	7
4.	Hambantota District :—						
	I.—Tangalla Area—						
	A.—Ranna—						
	(a) Ranna	75	—	—	—	—	1
	(b) Kahaduwa	35	1	2.86	—	—	—
	B.—Wiraketiya	36	10	27.78	1	2.78	—
	C.—Walasmulla	129	27	20.93	14	10.85	2
	D.—Kahawatta—						
	(a) Patiyawella	30	3	10	2	6.67	1
	(b) Tharaperia	58	3	5.17	—	—	1
	(c) Palathera	102	32	31.37	2	1.96	2
	(d) Kahawatta	141	16	11.34	3	2.12	—
	Total for Tangalla Area	606	92	15.18	22	3.63	7
	II.—Hambantota Area—						
	A.—Ambalantota	74	3	4.05	—	—	—
	B.—Hambantota	72	2	2.78	—	—	—
	C.—Kohalankala	75	—	—	—	—	—
	D.—Pahalamalalla	80	—	—	—	—	—
	E.—Tissamaharama	100	4	4	—	—	—
	Total for Hambantota Area	401	9	2.25	—	—	—
	Total for Hambantota District	1,007	101	10.03	22	2.18	7
	Total for Southern Province	3,371	163	4.83	41	1.21	24
	Males		2,705		139	5.13	
	Females		666		24	3.60	

Table 2.—Incidence of Filariasis and Elephantiasis by Age in the Southern Province.

Age Group.	Number examined.	Infected with Filariasis.	Percentage infected.	Cases of Elephantiasis.	Percentage of Elephantiasis.
2-10	1	..	—	..	—
11-14	132	5	3·78	1	0·75
15-19	376	11	2·92	4	1·06
20-30	1,090	40	3·66	11	1·00
31-40	722	30	4·15	9	1·24
41-50	474	20	4·22	9	1·90
Over 50	576	13	2·25	7	1·21
Total All Ages	3,371	163	4·83	41	0·012

Table 3.—Cases of Elephantiasis seen at Government Hospitals and Dispensaries in the Southern Province between November 16, 1925, and January 15, 1926.

District.	Persons seen.	Elephantiasis.	Percentage.
Galle District	8,888	22	0·25
Matara District	5,757	—	—
Hambantota District, Tangalla area	5,554	15	0·27
Hambantota District, Hambantota area	6,408	2	0·03

13. *Cholera*.—Three hundred and five cases with 186 deaths were reported during the year. Of these, 5 occurred in Colombo town, 1 in Colombo port, 10 in the Northern Province, 1 in the Province of Uva, 2 in the Province of Sabaragamuwa, 3 in the Central Province, 148 in the North-Central Province, and 135 in the Eastern Province. There was an outbreak in the North-Central Province during the second quarter of the year, and two outbreaks in the Eastern Province during the first and the second quarter of the year.

14. *Smallpox*.—There were 28 cases with 3 deaths, as against 45 cases with 9 deaths in the previous year, and 240 cases with 35 deaths in 1923. Of the cases reported during the year, 22 cases were landed in Colombo from steamers, 1 case occurred in Colombo town, 1 in the Province of Sabaragamuwa, 1 in the Northern Province, 2 in the Province of Uva, and 1 in the Central Province.

15. *Vaccinations*.—The total number of primary vaccinations performed during the year was 135,216, of these, 126,852 were successful and 1,587 were failures. In 6,777 cases the results were not determined.

The percentage of successful primary vaccinations was 93·81 per cent. in 1925, 97·81 per cent. in 1924, and 98·52 per cent. in 1923. Vaccination is carried on throughout the year by trained male and female vaccinators, the former vaccinate in the towns and villages and estates periodically according to annual programmes of vaccination, and the latter itinerate in the towns and villages to vaccinate Mushim women and children.

16. *Government Vaccine Establishment*.—The officer in charge reports 351 calves were received on hire from the contractor ; 349 calves were used for vaccination during the year, and of these 347 were returned to the contractor. Seed lymph for the vaccination of calves was obtained from the Lister Institute of Preventive Medicine, London, and also a small amount from the King Institute, Madras. A certain amount was also prepared locally. The total number of tubes of calf lymph issued during the year amounted to 132,069. Of this number 2,175 were sold, realizing a sum of Rs. 2,149·50. A large quantity of lymph was stored in bulk as a reserve supply for issue during epidemics of smallpox. 98·74 per cent. of primary vaccinations with calf lymph issued during the year were successful.

17. *Enteric Fever*.—The total number of cases treated in Government hospitals during the year was 1,520 with a death rate of 25·6 per cent., as against 1,600 cases with a death rate of 25·5 per cent. in 1924, and 921 cases with a death rate of 29·31 per cent. in 1923. As stated in previous reports, the number of hospital admissions does not indicate the actual prevalence of the disease for some deaths from enteric are undoubtedly included amongst those reported as due to “ pyrexia.”

The Registrar-General’s returns show that 721 deaths from enteric fever and 15,707 deaths from pyrexia of unknown origin were registered during the year and doubtless some of the latter should have been included under the former head

The corresponding figures in his returns for the previous year were 816 and 17,697 respectively. Many cases are only taken to hospital in the late stages of the disease and the mortality rate of such cases is therefore high. The following table gives some evidence of the incidence of the disease in Colombo and the Provinces as judged from hospital admissions :—

	1923.		1924.		1925.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo	255	104	290	102	380	121
Western Province	335	87	571	140	507	113
Central Province	118	26	167	35	124	26
Northern Province	20	2	50	9	29	6
Eastern Province	4	1	4	2	4	2
Southern Province	91	16	214	47	156	41
North-Western Province	27	9	16	7	24	8
North-Central Province	9	1	10	4	6	3
Province of Uva	6	1	40	8	41	11
Province of Sabaragamuwa	55	23	237	53	246	61
Lunatic Asylum, Colombo	—	—	—	—	3	—
Railway Extensions	1	—	1	1	—	—
	921	270	1,600	408	1,520	392

18. *Diphtheria*.—Eighteen cases with 6 deaths were recorded during the year, as against 19 cases with 7 deaths during the previous year. Of the former, 7 cases with 1 death and 1 case with 1 death were reported from Infectious Diseases Hospital, Colombo, and the General Hospital, Colombo, respectively, 3 cases with 1 death from the Western Province and 7 cases with 3 deaths from the Central Province.

19. *Influenza*.—Five thousand seven hundred and eleven cases were treated in Government hospitals with 91 deaths, a mortality rate of only 1·5 per cent. The corresponding figures for the previous year were 3,888, 115, and 2·9 per cent. respectively. 38,519 cases were treated at dispensaries during the year, as against 30,719 in 1924. Of the total number of cases treated during the year, 14,432 outpatients and 1,365 inpatients were treated in the Central Province and 9,942 and 2,169 respectively in the Western Province.

20. *Dysentery*.—The number treated in Government hospitals was 5,478 with 1,079 deaths, as against 6,165 and 1,217 respectively the previous year, and 5,884 with 993 deaths in 1923. Of the inpatients treated during the year 1,227 cases with 355 deaths were reported from the Central Province, 898 cases with 92 deaths from the Western Province, and 773 cases with 195 deaths from the Province of Sabaragamuwa, 3,723 deaths from dysentery were registered by the Registrar-General's Department during 1925, as against 4,080 in 1924 and 3,326 in 1923. The continued prevalence of and mortality from this disease emphasizes the necessity for improved water supplies in many districts and towns.

21. *Cancer and Sarcoma*.—The number of patients admitted to the various hospitals during the year with malignant growths was 400 with 63 deaths, as compared with 434 cases with 57 deaths in 1924, 443 cases with 59 deaths in 1923, and 463 cases with 79 deaths in 1922.

The total number of deaths from "cancer or malignant diseases" reported by the Registrar-General was 406, as against 473 registered in 1924 and 433 in 1923. Nineteen cases of cancer were admitted to the Lady Havelock Hospital for women, Colombo during the year under review—of these the sites were cervix uteri 16, ovary 1, breast 1, and bowel 1. The average age was 36·57 in 1925, 38·96 in 1924.

The admissions during the previous years were cancer of the cervix uteri 23, breast 2, bowel 2, and glands of neck 1 (secondary).

The following is an analysis of admissions for cancer to the General Hospital, Colombo, in 1925.

Cancer Returns, General Hospital, for 1925.																		
Tamils.																		
Age.	Sex	Cheek.	Tongue.	Penis.	Breast.	Cervix Uteri.	Rectum.	Palate and Jaw.	Skin and Extremities.	Calcum.	Pharynx and Oesophagus.	Glands.	Stomach.	Vagina.	Total.	Deaths.		
20—30	M	2	—	1	—	—	—	1	—	—	—	—	1	—	5	—		
	F	2	2	—	—	2	—	—	—	—	—	—	—	—	6	—		
31—40	M	7	1	—	—	—	—	2	—	—	—	1	1	—	12	1		
	F	2	1	—	2	2	—	—	—	—	—	—	1	1	9	1		
41—50	M	5	4	—	—	—	—	1	—	—	—	—	—	—	10	—		
	F	2	1	—	—	—	—	1	—	—	—	—	—	—	4	—		
51—60	M	4	1	1	—	—	—	—	—	—	—	—	1	—	7	—		
	F	1	1	—	2	1	—	—	—	—	—	—	—	—	5	1		
61—80	M	—	4	—	—	—	—	—	—	—	—	1	—	—	5	—		
	F	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Total		25	15	2	4	5	—	5	—	—	—	2	4	1	63	3		
Deaths		1	—	—	2	—	—	—	—	—	—	—	—	—	3	3		

Sinhalese.																		
20—30	M	5	2	4	—	—	1	1	1	—	—	—	—	—	14	—		
	F	1	—	—	1	8	—	—	—	—	—	—	—	1	11	1		
31—40	M	19	3	2	—	—	—	9	1	—	2	1	—	—	37	—		
	F	2	—	—	10	12	—	1	—	—	—	—	—	1	26	5		
41—50	M	22	8	4	—	—	—	11	3	—	—	2	—	—	50	1		
	F	5	1	—	3	20	1	3	—	—	—	—	—	1	34	—		
51—60	M	13	6	4	—	—	—	8	—	—	2	—	1	—	34	2		
	F	7	—	—	6	9	—	1	—	—	—	2	—	—	25	2		
61—80	M	16	—	4	—	—	—	8	—	—	—	1	—	—	29	12		
	F	3	—	—	—	2	—	1	—	—	—	—	—	1	7	3		
Total		93	20	18	20	51	2	43	5	—	4	6	1	4	267	26		
Deaths		15	—	—	8	—	—	2	—	—	—	—	1	—	26	26		

Forty-one cases of cancer were treated in all the hospitals in the Southern Province during the year. Of these 36 were fresh cases, cancer of cheek 14, penis 15, reetum 2, tongue 1, lip 1, uterus 1, scrotum 1, and forearm 1. The average age among males was 48 and females 47.

Ten cases of cancer were treated in the hospitals of the Province of Uva during the year. Of these 4 were cancer of the neck of the womb, 4 lips and cheek, 1 body of the womb, and 1 of the pancreas and gall bladder. The average age of the males 55 and females 42. Six cases of cancer were treated in the hospitals of the Northern Province. Of these 5 were cancer of the cheek and 1 cervix uteri. The average age of males 49·2 and females 54. Twenty-one cases were treated in the hospitals of the Province of Sabaragamuwa. Of these 4 were cancer of the penis, 3 cervix uteri, 3 lip, 2 cheek, 2 jaw, 1 tongue, 1 liver, 1 sacrum, 1 left leg, 1 left breast, 1 abdomen, and 1 great toe. The average age of males 50 and females 44. Forty-nine cases of cancer were treated in the hospitals of the Western Province including the Lady Havelock Hospital and excluding the General Hospital for which figures are shown above separately. Of these 17 were cancer of cervix uteri, 3 uterus, 1 malignant dermoid of ovary, 1 breast, 7 orbit, 1 eyelid, 5 jaw, 6 tongue, 1 lip, 2 cheek, 2 bowel, and 3 leg.

Four cases of cancer were treated in the hospitals of the Eastern Province. Of these 2 were cancer of penis, 1 tongue, and 1 lower jaw. The average age was 48 years.

Six cases were treated in the hospitals of the North-Central Province. Of these 2 were cancer of penis, 3 cheek, and 1 tongue. The average age of males was 46 and females 60. Nineteen cases of cancer were treated at the hospitals of the Central Province. Of these 5 were cancer of the cheek, 2 cervix uteri, 1 gum, 1 breast, 1 lower lip, 1 penis, 1 jaw, 1 tongue, 1 hard colate, 1 tonsils, 1 valva, in region of urethra, 1 glans penis, 1 uterus, and 1 cervix. The average age was males 54·28 and females 49·83.

Fourteen cases were treated at the hospitals of the North-Western Province. Of these 3 were cancer of penis, 4 cheek, 1 breast, 1 inguinal region, 1 left groin, 1 lip, 1 orbit 1 uterus, and 1 jaw. The average age was males 44 and females 40.

The large proportion of cases of cancer of the buccal region is again noticeable—this is almost certainly due to the prevalent habit of betel chewing.

22. *Anchylostomiasis*.—147,528 cases were treated at dispensaries during the year, and the following table of hospital admissions during the last 4 years indicates the relative prevalence and mortality of this disease in the various provinces :—

	1922.		1923.		1924.		1925.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo	588	81	573	134	554	72	635	71
Western Province	1,575	156	2,030	137	1,751	119	2,406	158
Central Province	2,519	281	2,957	270	2,907	275	2,839	293
Southern Province	1,418	110	1,222	88	1,410	58	1,385	46
Province of Sabaragamuwa	1,579	155	2,128	194	2,686	142	2,727	159
North-Western Province	754	74	809	85	737	68	876	72
Province of Uva	827	111	869	83	792	76	785	96
Eastern Province	111	5	225	13	371	20	215	8
North-Central Province	42	2	155	8	148	9	299	8
Northern Province	405	7	333	15	357	26	435	12
Railway Extensions	—	—	43	3	15	—	16	—
	9,818	982	11,344	1,030	11,728	865	12,618	923

Report submitted by Dr. W. C. Sweet, M.D., of the Rockefeller Foundation :—

ANCHYLOSTOMIASIS CAMPAIGN, 1925.

I.—Organization.

WORK for the relief and control of anchylostomiasis in Ceylon during the year 1925 was continued co-operatively by the Government of Ceylon, and the International Health Board of the Rockefeller Foundation. An Anchylostomiasis Committee, appointed by Government, approved plans for the work which the Director of Medical and Sanitary Services, and the Director in charge carried out. All administrative details were left to the Director in charge.

The participation of the International Health Board in the anchylostomiasis work was limited to the provision of a Director in charge and all expenses incurred by him. The remainder of the funds for the campaign were supplied by Government as a part of the budget of the Department of Medical and Sanitary Services.

II.—Administrative Organization.

The International Health Board Director in charge was changed during the year. Dr. J. F. Docherty served in this capacity from January 1 to February 23, 1925, when he left the Island. Dr. W. C. Sweet arrived in Ceylon on December 24, 1924, and took Dr. Docherty's place as Director in charge on February 23; Dr. Sweet continued to act until December 31, 1925. Dr. W. P. Jacocks arrived in Ceylon on October 2, 1925, and assumed duties as Director in charge on January 1, 1926.

Members of the Medical staff of the Medical and Sanitary Department were assigned to the Anchylostomiasis campaign as follows :—

Directors of Field Units.

Dr. A. T. Kuriyan, January 1 to December 31, 1925. | Dr. T. K. Jayaram, January 1 to December 31, 1925.  
Dr. E. S. Godlieb, January 1 to August 1, 1925. | Dr. W. S. Fernando May 15 to December 31, 1925.

Assistant Directors of Field Units.

Dr. D. S. de Simon, January 1 to December 31, 1925. | Dr. A. C. Fernando, May 15 to December 31, 1925.  
Dr. W. S. Fernando, January 1 to May 15, 1925. | Dr. J. S. Fernando, August 1 to December 31, 1925.  
Dr. E. Jayatilleke, January 1 to December 31, 1925. | Dr. H. A. Dirckze, November 5 to December 31, 1925.

In addition to these Medical Officers, others did direct anchylostomiasis work as follows :—

Dr. P. K. Naidu, January 19 to November 15, 1925. | Dr. K. T. Nath, November 15 to December 31, 1925.  
These two officers administered treatments at Mandapam Camp where they held the position of Quarantine Medical Officer.

Dr. H. U. Leembruggen, School Medical Officer, Northern Province, October 4, 1925, to December 31, 1925.

The number of persons on the Anchylostomiasis Campaign staff, by months of the year 1925, is given in Table I. Only Ceylon personnel giving their whole time to anchylostomiasis work are included in this table; the International Health Board members are not included.

Table I.—Personnel of the Anchylostomiasis Campaigns, Ceylon, January 1, to December 31, 1925.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Directors	.. 3 ..	3 ..	3 ..	3 ..	3 ..	4 ..	4 ..	3 ..	3 ..	3 ..	3 ..	3
Assistant Directors	.. 3 ..	3 ..	3 ..	3 ..	3 ..	3 ..	3 ..	4 ..	4 ..	4 ..	5 ..	5
Clerks	.. 6 ..	6 ..	6 ..	6 ..	6 ..	6 ..	6 ..	6 ..	7*..	7*..	7*..	7*
Microscopists and Dis- pensers	.. 31 ..	30 ..	29 ..	33 ..	36 ..	36 ..	37 ..	38 ..	38 ..	39 ..	39 ..	39
Coolies	.. 7 ..	7 ..	7 ..	7 ..	8 ..	8 ..	8 ..	8 ..	8 ..	8 ..	9 ..	9
Total	.. 50	49	48	52	56	57	58	59	60	61	63	63

\* The extra clerk was paid by the International Health Board, who also paid a part of the salary of the clerk of the Director in charge.

III.—Work accomplished.

1. *Total Work during 1925.*—The work of the Ceylon Anchylostomiasis Campaigns during 1925 was mainly the giving of mass treatment and the completion of an island-wide survey begun in 1924. Sanitary work throughout the Island was undertaken by the Medical and Sanitary Department and the local authorities of towns and cities. Work in Ceylon was carried on by (1) village and estate treatment units ; (2) a laboratory unit ; (3) school treatment unit ; (4) treatments of coolies passing through Mandapam Quarantine Camp ; and (5) treatments given by Government hospitals and dispensaries. Table II. gives the number of treatments administered during the year. All of these treatments were given under the mass treatment plan, without previous microscopical examination.

Table II.—Total Anchylostomiasis Treatments administered in Ceylon between, January 1 and December 31, 1925.

	Number of Persons in Census.	Treatment given.		
		First.	Subsequent.	Total.
Village units ..	87,550 ..	79,029 ..	7,270 ..	86,299
Estate unit ..	82,359 ..	76,540 ..	630 ..	77,170
School work ..	18,845 ..	18,845 ..	— ..	18,845
Laboratory unit and central office..	4,104 ..	4,104 ..	79 ..	4,183
Total for Anchylostomiasis Campaign ..	192,858 ..	178,518 ..	7,979 ..	186,497
Treatments at Mandapam Quar- antine Camp ..	102,412 ..	52,784 ..	— ..	52,784
Treatments at Government hospitals and dispensaries ..	266,7091*	742,735 ..	171,921 ..	914,656
Grand Total for Ceylon ..	2,962,361	974,037	179,900	1,153,937

\* This figure is the total hospital admissions. 169,969, and the total outdoor patients of all hospitals and dispensaries, 2,497,122 for the year 1924.

The Anehylostomiasis Campaign staff gave 178,518 first treatments on the mass treatment plan of control for hookworm infection during 1925. The policy of giving more than one treatment was definitely abandoned during this year, and second or subsequent treatments were given only to special cases or to persons who asked for them ; subsequent treatments, therefore, numbered only 7,979 during the year, a total of 186,497 treatments given. The annual report for 1924 stated that 145,991 first treatments had been given during that year, which, with 40,709 subsequent treatments, made a total of 186,700 treatments.

Through a fault in the school work report sheets, a census of school children was not obtained, so the census for this work is given as the number treated. This also applies to the work of the laboratory unit and central office. In the village and estate work, where a true census was kept, 155,569 persons out of a census of 169,909, a percentage of 91·6 received first treatment. This percentage of persons seen who received treatment gives an indication of what other forms of Ceylon hookworm work should do.

The total first treatments given in Ceylon by all agencies reporting to the Anchylostomiasis Campaigns were 974,037 ; in addition 179,900 subsequent treatments were given, making a grand total for Ceylon of 1,153,937.

2. *Village Work done during 1925.*—Village work in Ceylon was carried on during the year in (a) the Homagama-Padukka area ; (b) the Horana area ; (c) the Weligama area ; and (d) the triangular area. Work in the Homagama-Padukka and the Weligama areas began during 1924 and was completed in 1925 ; the Horana area was started during the year. The triangular area was one of the first village areas in Ceylon to receive attention ; work was begun there during 1925 to determine the feasibility of retreating previously visited areas. All of these village areas are in the Western Province, with the exception of the Weligama area in the Southern Province.

HOMAGAMA-PADUKKA AREA.

Work began in this area on January 3, 1924, with Dr. E. S. Godlieb as Director and Dr. W. S. Fernando as Assistant Director. Dr. Godlieb continued in charge of the work until it was completed on July 31, 1925 ; Dr. A. C. Fernando became Assistant Director when Dr. W. S. Fernando was made Director of school work in May, 1925.

The total census of this area was 56,738, of whom 47,472 persons received first treatment, that is, 83·7 per cent. of the population received at least one treatment. This satisfactory result was due to the efforts of the staff, and to the active assistance given by the Government Agent and Assistant Government Agent of the Western Province by the Mudaliyars of the korales concerned, and by the headmen of the respective villages.

The area had been thoroughly pre-sanitated by the Sanitary Department, so it is probable that the effects of this round of mass treatment will be marked for some years to come.

HORANA AREA.

The Horana area just south of the Homagama-Padukka area was taken up on August 1, 1925, on the completion of the latter. Dr. E. S. Godlieb made preliminary arrangements for work in the Horana area, but accepted a scholarship and left the Anchylostomiasis Campaign on August 1, 1925. Dr. A. T. Kuriyan was assigned as Director of the work on that date, and Dr. J. S. Fernando was made Assistant Director ; they continued in these positions during the remainder of the year.

Between August 1 and December 16, 1925, 22,136 persons were put on the census, and 20,398 of these received first treatment. The Mudaliyar of the korale in which work was carried on was newly appointed to the post about August 1, but in spite of this handicap the work was carried on satisfactorily with his assistance and with that of the Assistant Government Agent stationed at Kalutara.

The Horana area was not entirely pre-sanitated by the Sanitary Department as sufficient staff was not available at the time. There was, however, a permanent sanitary Inspector in the area and a percentage of the homes had latrines.

The officers in charge of the Anchylostomiasis Campaign's work endeavoured to arouse interest in the Sanitary Inspectors efforts, and a greater degree of sanitation should be more easily attained through their combined efforts.

WELIGAMA AREA.

Work in the Weligama area, a korale between Matara and Calle, in the Southern Province, began on October 1, 1924, after a pre-sanitation campaign conducted by the Sanitation Department. Dr. A. T. Kuriyan was in charge of this work until August 1, 1925, when Dr. A. C. Fernando was put in charge to close up the work. The area was completed on August 29, 1925. Just before the close of the effort in this area, extra dispensers were assigned to the unit, and treatments were carried out in the unsanitated northern portion of the korale, so that the whole Weligama korale was covered.

In the Weligama korale 27,484 persons were listed on the census and 23,706 received first treatment. There were 1,412 subsequent treatments given, making a total of 25,118 treatments in this area.

Dr. Kuriyan, on the completion of his work in the Weligama area, stated that he was much indebted to Messrs. G. S. Wodeman and A. N. Strong, successively Assistant Government Agent at Matara and to Mr. S. W. Illangakoon, Mudaliyar of Weligam korale, for the success of the work.

TRIANGULAR AREA.

Retreatment work in the triangular area began on January 3, 1925, when Dr. S. de Simon was assigned as Assistant Director in charge, with a half unit. Dr. A. C. Fernando was also assigned to this area, with another half unit, on the completion of work in the Weligama area. Work continued until the end of the year and should be completed in March, 1926.

The triangular area was one of the original areas in which village work was done in Ceylon and was sanitated some years ago. The sanitation done in 1925 is as follows :—

Number of villages in the area	..	..	..	27
Number of houses	..	..	..	4,041
Number of latrines	..	..	..	3,302

The Director who began work in 1925 reported that the general sanitation of the area was fair.

Some opposition to retreatments was encountered and many of the headmen were apathetic, but with one or two exceptions, a reasonably large percentage of the residents of the headmen's divisions were treated. It was found entirely feasible, if somewhat difficult, to retreat persons treated some years before.

During the year, 18,631 persons were placed on the census and 17,417 received first treatment, 93·5 per cent. There were 3,044 second and subsequent treatments given, a total of 20,461 treatments.

3. *Estate Work.*—Dr. T. K. Jayaram was placed in charge of estate demonstration work during 1924 and began treatments in the Dimbula Planters' Association area on September 5, 1924. During 1925 work was completed in the Dimbula and Dikoya areas, and begun in the Maskeliya area ; the latter area should be completed in February, 1926. These areas had been previously covered by Anchylostomiasis Campaigns units and the co-operation of estate superintendents was satisfactory. No trouble was encountered in treating the coolies, who were usually glad to take the treatment and insisted that their children take the vermifuge.

In addition to the treatments given by Dr. Jayaram's unit, the itinerating laboratory unit under Dr. E. Jayatilleke treated 2,647 estate coolies in the Badulla and Lunugalla Districts of the Province of Uva. These treatments were given only when requested by estate Superintendents. A total of 76,540 estates coolies received treatment during 1925.

During the year the Director of Medical and Sanitary Services sent a letter to each Planting Association in Ceylon.

A copy of the letter follows :—

THE SECRETARY,  
Planters' Association.

No. 7,432,  
Medical Department,  
Colombo, July 20, 1925.

SIR,—I HAVE the honour to direct the attention of your Association to the fact that for the successful combating of anchylostomiasis on estates the routine treatment at regular intervals of all estate labourers—

- (a) As they pass through Mandapam Camp,
- (b) On the estates on which they are working,

is an important factor.

2. It is in the last mentioned treatments that the members of your Association are hereby asked to co-operate. It has been decided to ask all Superintendents of estates to see that such treatment is given to all their coolies once in every one and a half or two years.

3. The treatment now being used by the Director of the Anchylostomiasis Campaign is simple, safe, and efficient. Dispensers employed by your estates can undertake the treatments with safety after they have received instructions.

4. The Director, Anchylostomiasis Campaign, "Homeleigh," Castle street, stands ready to do all in his power to see that your men are adequately trained or instructed to give these treatments and to furnish all necessary information.

5. The most permanent method of controlling the hookworm problem is the provision of adequate latrine accommodation, but the routine regular treatment of every cooly, mass treatment as it is called, will result in adequate control while such sanitation is being improved or introduced.

6. The benefits of hookworm control have been demonstrated repeatedly in various parts of the Island, and there is no doubt of the advisability of making these treatments a feature, for the present, of estate routine.

7. The treatment now being given for Anchylostomiasis requires only one day's absence from work, and from 200 to 300 coolies can be treated in one day.

8. It is urged that all Superintendents set aside one day, or more, if the size of the labour force demands it, every eighteen months for the treatment of all coolies on their estates, and it is requested that they send reports to the Director's office, when treatment are given of the size of the labour force and the number given treatment.
9. The co-operation of the members of your Association in this plan for the betterment of the health and working ability of the cooly is urgently requested.

I am, Sir,  
Your obedient servant,  
J. F. E. BRIDGER,  
Principal Civil Medical Officer, and  
Inspector-General of Hospitals.

In addition to this letter another was sent out to each Superintendent of an estate by the Directors, Anchylostomiasis Campaigns. To these letters 35 replies were received. This did not indicate any great degree of interest in the question on the part of estate Superintendents and owners in general. The question of the treatment of its own coolies by each estate is one that is not solved. That much remains to be done by the estates themselves is well shown by the record of estate dispensers employed on 246 estates in the Central Province. These figures were compiled from the reports of the Field Director working in these districts.

Table No. III.—Number and Distribution of Estate Dispensers in 246 Estates of 11 Planting Districts in the Central Province, Ceylon, 1924–1925.

Estate Areas.	Number of Estates.	Total Labourers.	Total Number of Dispensers.	Number of Estates employing								
				No Dispensers.	1 Dispenser for							
					1	2	3	4	5	6	7	
												Estates.
Total	12	246	98,017	57	60	8	10	17	11	4	6	1
Groups												

It will be noted that 60 estates employed no dispensers. The total number of dispensers employed in 246 estates is 57, that is 1 dispenser for 4.5 estates, or one dispenser to each 1,720 coolies.

According to the Annual Report for 1924, estates treated by the Anchylostomiasis Campaign staff agreed to provide an adequate number of dispensers to carry out yearly mass treatments of their own coolies. This has not been done as yet, and the demonstration conducted by the Campaign will have no lasting effects, unless this promise is fulfilled.

4. *School Work.*—A new departure in anchylostomiasis control work in Ceylon was the institution during 1925 of definite school treatment work. A unit was set aside for this work in June, 1925, and Dr. W. S. Fernando was made Director. This was in accordance with the programme for permanent control of anchylostomiasis in Ceylon drawn up by Dr. W. A. Sawyer and Dr. J. F. Docherty during 1924. This programme called for the treatment of all the school children of the Island, with the exception of those in the Western Province and the wetter parts of the Southern Province.

Dr. Fernando and his unit began work in the Northern Province just south of Elephant Pass, and by the end of the year had covered the Northern Province, with the exception of Jaffna Peninsula, the North-Central and part of the North-Western Provinces. There was little opposition to this work on the part of parents or children and, thanks to the co-operation of the Director of Education, the teachers, as a general rule, assisted as much as possible. The main difficulties of the work were the frequency and irregularity of vacations and the location of the schools, many of them being in the jungle and not readily accessible. Between June and the end of the year, 15,061 children had received one treatment each.

The Medical and Sanitary Department designated Dr. H. U. Leembruggen as Medical Inspector of Schools for the Northern Province, and the Anchylostomiasis Campaign assigned one dispenser to him on June 15, 1925, to assist him in giving hookworm treatments. Dr. Leembruggen was transferred in October, 1925, but in spite of this 3,784 school children of the Jaffna Peninsula received treatment. This was largely retreatment work as Dr. S. de Simon treated the school children of the Peninsula in 1924. A total of 18,845 school children received special treatment during the year.

The school work was the most promising feature of the year's work. It reached the future adult of the Island during the most impressionable years with lectures and demonstrations of sanitation and started the young adult with a minimum hookworm infection. With organization it should be possible to arrange this work so that the Medical Officer will have more time for propaganda work and will be able to recover his territory at frequent intervals, reaching not only the children but also many of the adults. In view of the findings of the Island-wide survey reported elsewhere, there seems to be no reason for not applying this school treatment method of control to the whole Island.

5. *Laboratory Unit and Central Office.*—The Itinerating unit under Dr. E. Jayatilleke engaged in an Island-wide hookworm survey gave a certain number of treatments where they were requested; those given in the Badulla and Lunugalla Districts of the Province of Uva were mentioned under estate work. A few persons applying for treatment at the Central Office in Colombo were also included in this category. A total of 4,104 persons received first treatment from both sources.

The results of the Island-wide hookworm survey are given in a separate report.

6. *Mandapam Camp.*—Treatment of coolies passing through Mandapam camp was begun early in January, 1925, in accordance with the proposals of the Ceylon and Madras Governments outlined in the annual report for 1924. Treatments were given by the Quarantine Medical Officer of the Camp under the supervision of the Superintendent. At first the Medical Department furnished an Apothecary for this work, but this man's services were later dispensed with. The personnel and all expenses of the work, with the exception of one dispenser supplied and paid by the Anchylostomiasis Campaign were provided by the Board of Immigration and Quarantine. Dr. P. K. Naidu was in charge of the work at first and was followed by Dr. K. T. Nath. Dr. S. Ponniah acted as a special Anchylostomiasis Officer on assignment from the Medical and Sanitary Department for a short time in the busy season; it is expected that a special officer will be necessary during the "rush" months. There were no objections to treatment during the year, and there would seem to be no question of the coolies objecting to this new custom.

Out of 102,412 coolies available for treatment during the year 52,784 received one treatment. That is 51.5 per cent. of the coolies arriving in Ceylon during the year had a minimum anchylostomiasis infection. Treatment was suspended several times due to the presence of cholera in the camp and many persons were exempted on account of their poor physical condition. However, for the greatest benefits to be derived from this treatment of incoming coolies, the largest possible percentage should be treated. Future years reports should show a considerably higher proportion treated.

7.—Treatments at Government Hospitals and Dispensaries.

	First Treatment.	Subsequent Treatment.	Total.
Western Province ..	126,518	32,583	159,101
Central Province ..	109,458	21,560	131,018
Southern Province ..	122,146	44,366	166,512
Northern Province ..	40,291	10,831	51,122
Eastern Province ..	89,708	17,328	107,036
North-Western Province ..	120,665	24,679	145,344
North-Central Province ..	27,963	4,135	32,098
Province of Uva ..	29,098	2,407	31,505
Province of Sabaragamuwa ..	76,888	14,032	90,920
Grand Total ..	742,735	171,921	914,656

Table IV.—Number of *Anchylostomiasis* Treatments given by Government Hospitals and Dispensaries during 1925 by Provinces and the Percentage of these Treatments to the Number of 1924 Dispensary Patients.

	Outdoor 1924.	Treatments Anchylostomiasis. 1925.	Percentage.
Western Province ..	505,544	159,101	31·5
Central Province ..	313,613	131,018	41·8
Southern Province ..	335,618	166,512	49·6
Northern Province ..	187,290	51,122	27·3
Eastern Province ..	273,478	107,036	41·7
North-Western Province ..	377,649	145,344	38·5
North-Central Province ..	176,059	32,098	18·2
Province of Uva ..	90,125	31,505	35·0
Province of Sabaragamuwa ..	200,331	90,920	42·4
Railway Extensions ..	37,415	—	—
Total ..	2,497,122	914,656	36·6

8. *Laboratory Report for 1925.*—Microscopic examinations were made during the year at a central laboratory in Colombo. For part of the year examinations were also made by microscopists attached to Dr. Jayaram's estate unit and to the school unit under Dr. W. S. Fernando. All faecal specimens received in which the quantity of faeces was sufficient were examined by the Stoll egg-counting method, and all specimens small in quantity or showing no eggs by the Stoll method were examined by the Willis method. The numbers of examinations made by the itinerating survey unit were not included in this report as they were considered elsewhere. A total of 14,054 specimens were examined by the Stoll method, and 509 by the Willis method alone, so 14,563 persons in all were examined. For purposes of record the results of these examinations are given in Tables V. and VI.

Table V.—Laboratory Report for Examinations made between January 1 and December 31, 1925.\*

	Before Treatment.					After Treatment.					Total number of Examinations.
	Number of Persons examined.	Total Egg-c. per Gram of Faeces.	Average E.C. per Gram per Person.	Number of Persons Infected with H.Ws.	Per Cent. Infected.	Number of Persons examined.	Total Egg-c. per Gram of Faeces.	Average E.C. per Gram per Person.	Number of Persons Infected with H.Ws.	Per Cent. Infected.	
Triangular area ..	1,857..	1,211,300..	652..	1,189..	64·0..	1,402..	168,000..	120..	458..	32·7..	3,259
Weligama area ..	533..	310,900..	581..	317..	59·5..	471..	61,900..	131..	111..	23·6..	1,004
Horana area ..	748..	670,000..	896..	565..	75·5..	60..	5,400..	90..	9..	15·0..	808
Dikoya area ..	1,193..	745,100..	624..	783..	65·6..	617..	80,300..	130..	178..	28·8..	1,810
Bogawantalawa area ..	397..	266,700..	672..	317..	79·8..	405..	36,400..	90..	70..	17·3..	802
Maskeliya area ..	360..	307,200..	853..	292..	81·1..	86..	23,400..	272..	35..	40·7..	446
Dimbulla area ..	2,101..	1,062,900..	506..	1,520..	72·3..	2,032..	147,200..	72..	576..	26·3..	4,133
School unit ..	1,302..	1,665,100..	1,279..	1,263..	97·0..	267..	136,300..	510..	195..	73·0..	1,569
Central office ..	223..	281,400..	1,262..	158..	70·8..	— ..	— ..	— ..	— ..	— ..	223
Total ..	8,714	6,520,600	748	6,404	73·5	5,340	658,900	123	1,632	30·6	14,054

\* This does not include 32,507 examinations made by the Island-wide survey unit during the year.

Table VI.—Intestinal Parasites found in the Course of Microscopic Examinations made during 1925.

	Before Treatment.		After Treatment.	
	Number.	Per Cent.	Number.	Per Cent.
Persons examined ..	9,167	—	5,396	—
Infected with hookworms ..	6,847	74·7	1,646	30·5
Infected with ascaris lumbricoides ..	4,631	50·5	1,855	34·4
Infected with Trichuris Trichiura ..	3,709	40·5	1,106	20·5
Infected with Oxyuris Vermicularis ..	93	1·0	24	0·4
Infected with Taenia ..	5	0·05	8	0·1

This table includes 509 examinations made by Willis method only and not included in first laboratory report table.

9. *Drugs used.*—Throughout the year the majority of treatments were given according to the dosage table recorded in the 1924 annual report. The adults received carbon tetrachloride and the children oil of chenopodium. The first was given in a solution of magnesium sulphate, the latter usually in castor oil.

The school treatment unit, and at times the other units, gave a combination of carbon tetrachloride and oil of chenopodium according to the following dosage table :—

Apparent Age.		Carbon Tetrachloride Minims.		Oil of Chenopodium Minims.
2	..	2	..	1
3- 4	..	4	..	2
5- 6	..	6	..	3
7 -9	..	10	..	5
10-12	..	14	..	7
13-15	..	16	..	8
16-18	..	20	..	10
19-50	..	30	..	10
51-65	..	24	..	8
66 and over	..	21	..	7

The ratio of carbon tetrachloride to oil of chenopodium is 2 to 1 up to 18 years of age, and 3 to 1 thereafter.

This combination worked well and when given in full doses was efficient in removing both hookworm and ascarides. It would seem to be the most logical vermifuge to use in a country in which infection with ascarides are so common.

III.—SPECIAL REPORTS DURING THE YEAR.

1. Treatment of hookworm and ascaris infections with carbon tetrachloride and oil of chenopodium. (The Ceylon Journal of Science, Section D—Medical Science, Vol. Ia, Part 3, page 121, November 18, 1925.)

The work here reported was done in the Bogambara Jail, Kandy, in January and February, 1925, where 52 prisoners were given various combinations of treatment. Stools subsequent to treatment were collected and worm counts made. Table VII. gives a summary of the results of this work. Trial treatments were as stated in the table. The best treatment consisted of 2 c.c. of oil of chenopodium in a single dose, followed in one hour by a purge of magnesium sulphate. All the hookworms recovered were of the species *Necator americanus*.

Table VII.—Relative Efficiency of Four Trial Treatments in Removing Hookworms and Ascarides.

Trial Treatments Given.	Number of Persons Treated.	Hookworms Recovered.				Ascarides Recovered.			
				Per Cent.				Per Cent.	
		After Trial Treatment	After Test Treatment	recovered after Trial Treatment.		After Trial Treatment	After Test Treatment	recovered after Trial Treatment.	
Carb. Tet. 1·8 cc. and oil of Chenopodium 0·6 cc. in one dose followed in 2 hours by a purge of salts ..	15	..	2,320	..	795	..	74·5	..	42
Carb. Tet. 2·4 cc. in a single dose followed in 2 hours by a purge of salts ..	14	..	2,150	..	277	..	88·6	..	27
Carb. Tet. 2·4 cc. in a single dose given in a purge of salts ..	10	..	506	..	23	..	95·6	..	8
Carb. Tet. 1·8 cc. with oil of Chenopodium 0·6 cc. in a single dose given in a purge of salts ..	13	..	2,248	..	29	..	98·7	..	39
All Trial Treatments ..	52	..	7,224	..	1,124	..	86·5	..	116
									49
									70·3

A summary of the work done is as follows :—

- (a) The most efficient treatment tested for removing hookworms was a combination of carbon tetrachloride and oil of chenopodium, in a ratio of three to one, given in a solution of magnesium sulphate for a purge. This combination was also highly efficient in removing ascarides, although the giving of the salts two hours after the anthelmintic increased the efficiency in removing these worms. In a country where infection with *Ascaris lumbricoides* is widespread, the combination treatment given in a purge of magnesium sulphate will be a better routine measure than either of the anthelmintics given alone.
  - (b) In the series of treatments here reported no decided preferential action on hookworms of either sex could be determined.
  - (c) The giving of salts with the anthelmintic apparently delayed the expulsion of the majority of both hookworms and ascarides until the second day following treatment, but increased the efficiency of the trial treatment in removing hookworms.
  - (d) The degree of infection with hookworms was found to have some effect on the efficiency of trial treatments, the highest efficiency being found in groups with, from 51 to 200 worms each. Infections with smaller and larger numbers of worms did not show as high an efficiency for trial treatments.
2. Average egg-count per gram per female hookworm. (Published in Journal of Parasitology (U. S. A.) reference not available.)

During the work just reported certain data were obtained as to the relation between hookworm egg-counts per gram, as determined by the Stoll method, and the number of female worms producing the eggs. Table VIII. gives a summary of the findings.

The groups of the table correspond to those of Table VII.

Table VIII.—Average Egg-count per Gram of Faeces per Female Hookworm.

Group.		Number of Persons in Group.		Total Egg-count per Gram of Faeces.		Average Number of Eggs per Gram of Faeces per Person.		Number of Female Hookworms Recovered.		Average Number of Female Worms per Person.		Average Number of Eggs per Gram of Faeces per Female Worm.	
1	..	15	..	31,400	..	2,093	..	1,722	..	115	..	18·2	
2	..	14	..	33,700	..	2,407	..	1,404	..	100	..	24·0	
3	..	10	..	13,100	..	1,310	..	301	..	30	..	43·6	
4	..	13	..	39,200	..	3,015	..	1,154	..	89	..	33·9	
All Groups	..	52	..	117,400	..	2,258	..	4,581	..	88	..	25·6	

The numbers of persons in the various groups were too small to be of significance, so any conclusions drawn had to be based on the results of all groups, 52 persons, a number large enough to be of some value. On the basis of these results, it was recommended that Stoll's original factor of 25 eggs per gram of faeces per female worm, in mushy stools, be used in changing Ceylon egg-counts into presumptive worm counts. It was found that practically all stools examined in Ceylon were of such a nature that they would probably fall in Stoll's classification of mushy stools, so for general use the factor 25 would probably give a close approximation to the actual number of female hookworms present in any group. As male worms and female worms are usually present in approximately equal numbers, over a large series of counts, the total worm count was to be determined by dividing the egg-count by 25 and multiplying the resultant number of female worms by two.

It was found, as reported previously by other workers, that the Stoll egg-counting method would not give any requisite degree of accuracy in individuals nor in small groups. The method is one of averages and of approximate accuracy only, but when applied to large groups of people it gives a trustworthy idea of the average intensity of infection of the group.

3. Hookworm Re-infection. (The Ceylon Journal of Science, Section D—Medical Science, Vol. I., Part 3, November 18, 1925, page 129.)

The work reported in this paper was done in the Central Province of Ceylon, during the course of an Island-wide egg-counting survey begun by Dr. J. F. Docherty in 1924. The results of 8,239 egg-counts were analysed as to previous treatment and a bar diagram was given showing the hookworm infection intensity rates at yearly intervals after treatment. Table IX. gives a summary of the results of these analyses.

Table IX.—Hookworm Intensity and Infection Rates by Year of Last Treatment.

Treatment.	Number of Persons Examined.		Average Egg- count per Gram of Faeces per Persons.		Number of Persons found infected Stoll and Willis Method.		Percentage infected with Hookworms.
Within 15 days of treatment	1,728	..	75	..	461	..	26·7
Last treated in 1924	154	..	324	..	85	..	55·2
Last treated in 1923	18*	..	1,258	..	14	..	77·8
Last treated in 1922	181	..	544	..	123	..	67·9
Last treated in 1921	361	..	660	..	272	..	75·3
Last treated in 1920	635	..	675	..	506	..	79·7
Last treated in 1919	473	..	567	..	388	..	82·0
Last treated in 1918	582	..	705	..	518	..	89·0
Last treated in 1917	253	..	909	..	224	..	88·5
Last treated in 1916	29*	..	1,018	..	24	..	82·8
Never treated	3,825	..	1,108	..	3,409	..	89·1
Grand Total	8,239		745		6,024		73·1

\* The number of persons examined in these two groups were so small as to make the results of no significance.

The following summary gives the substance of the deductions drawn from these analyses :—

From an analysis of 8,239 Stoll egg-counts made in Ceylon, previously treated persons were found to have a considerably lower infection intensity than untreated persons, the reduction being greatest in the children's groups.

Re-infection with hookworms subsequent to treatment was found to be most rapid in the first three years after treatment. Between the third and seventh years after treatment intensity rates remained at a level, with variations of less than 12 worms, and then began to rise. The percentages of persons found infected showed an initial sharp rise and then a small steady increase.

The average length of life of the adult hookworm was suggested to be between 3 and 5 years. The importance of sanitation was upheld, but it was argued that the impossibility of immediately introducing adequate sanitation was no bar to the eventual accomplishment of hookworm control.

*Conclusion.*—On the basis of the year's experience and considering the results of the Island-wide infection and intensity survey reported elsewhere, it seems that the immediate future programme of Anchylostomiasis work should be considered on a wider basis.

The degree of infestation as revealed by the Island-wide survey is sufficient to justify Island-wide measures of attack. Instead of confining the work to selected areas in which long periods of time are spent, it is suggested that the work be planned on a scale to cover the entire Island every twelve to eighteen months. A hint as to methods has already been given this year in school treatment work.

Such an Island-wide programme would call for periodic treatments of—

- (a) School children by itinerating units.
- (b) Estate labourers—
  - (i ) By estate personnel with medical supervision by the Anchylostomiasis staff.
  - (ii ) By quarantine officers at Mandapam Camp.
- (c) General population at Government hospitals and dispensaries.

The usefulness of all these methods would be enhanced by active educational work through the distribution of literature, lantern lectures, by demonstration, and by personal conferences.

Sanitation is recognized as the best method of controlling hookworm disease. Sanitation is admittedly difficult and slow for many reasons, but progress in this respect is being made. Until sanitation is satisfactorily instituted and maintained, the best means of keeping the disease under control is by periodic treatments. If those concerned would keep these points in mind and act on them, the control of hookworm disease would be accomplished in a reasonable time.

23. *Tubercular Diseases of the Lungs*.—The number of hospital cases treated during the year was 4,155 with 1,000 deaths, as against 3,656 with 860 deaths in 1924, 4,099 cases with 990 deaths in 1923, 3,308 cases with 865 deaths in 1922, and 3,353 cases with 881 deaths in 1921.

The provincial distribution of hospital cases treated in 1924 and in 1925 was as under :—

	1924.		1925.	
	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo .	585 ..	226 ..	570 ..	297
Lunatic Asylum ..	96 ..	18 ..	101 ..	30
Western Province ..	1,968 ..	381 ..	1,981 ..	335
Central Province ..	206 ..	61 ..	296 ..	79
Northern Province ..	53 ..	11 ..	81 ..	12
Eastern Province ..	35 ..	8 ..	53 ..	11
Southern Province ..	242 ..	40 ..	220 ..	43
North-Western Province ..	76 ..	20 ..	194 ..	41
North-Central Province ..	25 ..	6 ..	29 ..	9
Province of Uva ..	93 ..	22 ..	159 ..	31
Province of Sabaragamuwa .	277 ..	67 ..	471 ..	112
Railway Extensions ..	— ..	— ..	— ..	—
	3,656	860	4,155	1,000

The Western Province cases include patients from all the Provinces who come to Colombo, Kandana, and Ragama for treatment. The percentage of deaths to total treated during the year was 24·09, and the Registrar-General's return gives a total of 3,525 deaths, as against 23·52 and 3,235 deaths respectively the previous year. Three special institutions—the Anti-Tuberculosis Institute, Colombo, the Kandana Sanatorium, Western Province, for early cases, and the Ragama Tuberculosis Hospital, Western Province, for advanced and chronic cases are maintained to deal with this disease, and a large number are treated in the tuberculosis wards of the General Hospital, Colombo.

*At the Institute in Colombo*.—The number of new cases was 3,351, as compared with 3,312 in 1924, 3,565 in 1923, 3,000 in 1922, and 2,785 in 1921. Of the cases seen during the year, 898 were referred to the hospital at Ragama and 164 to the sanatorium at Kandana, and the others attended the institute for medicine and advice.

*At the Kandana Sanatorium*.—240 cases were admitted (138 males and 102 females) and these with 43 remaining on December 31, 1924, made a total of 283 cases treated during the year, 213 from the Western Province, 23 from the Southern Province, 17 from the Province of Sabaragamuwa, 13 from the Central Province, 11 from the North-Western Province, 4 from the Province of Uva, 1 from the Northern Province, and 1 from the Straits Settlements. Of the total number treated (218) were discharged or left the sanatorium of their own accord, 9 cases were transferred to Ragama and 56 remained on December 31, 1925. There were no deaths. The average duration of stay in hospital of each patient during the year was 76·65 days of those discharged, in 28 the disease was arrested, 26 were reported as much improved, 139 as improved, and in 34 there was no improvement.

*At the Ragama Hospital for Chronic Cases*.—(235 beds for males and 103 for females.) The number of patients admitted during the year was 1,077, of which 50 were readmissions, and the total number of deaths 264. The daily average sick in hospital for the year was 337·47.

In 69 patients the disease was arrested and they were transferred to the Kandana for sanatorium treatment.

24. *Leprosy*.—Two asylums are maintained in the Island for the segregation of lepers under the Lepers Ordinance, No. 4 of 1901—at Hendala in the Western Province and the island of Mantivu in the Eastern Province. They are nursed by Religious Sisters with the help of male and female attendants at both asylums.

There were 131 lepers at Mantivu island on December 31, 1924. Thirty-nine were admitted during the year, 2 died, 25 were discharged or absconded and 131 remained on December 31, 1925. Of the admissions, 14 were new cases and 25 readmissions. The daily average in the asylum during the year was 121·71, and the percentage of death 1·25.

The report of the Medical Superintendent in charge of the Asylum at Hendala gives the following figures for the year under review :—

	Males.	Females.	Total.
Remained on December 31, 1924 ..	422 ..	101 ..	523
Admitted during 1925 ..	112 ..	28 ..	140
Discharged during 1925 ..	52 ..	5 ..	57
Died during the year ..	53 ..	12 ..	65
Remained on December 31, 1925 ..	429 ..	112 ..	541

Of the 140 admissions, 115 were new cases, and they were in the following stages of the disease, tubercular 25, anaesthetic 42, and mixed 48. The new admissions were from the following Provinces :—Western 60, Central 8, Southern 20, Northern 5, North-Central 2, North-Western 6, Sabaragamuwa 11, and Uva 3.

Of the 57 patients discharged from the asylum, 4 were granted permit for home isolation. 10 Indian Tamils were repatriated to India, and 43 absconded from the asylum. Of the 43 absconders, 25 returned of their own accord or were brought by Police, and 18 are still at large. The number of deaths was 65 (males 53 and females 12). The percentage of deaths to total treated was 9·80, as against 7·83 the previous year.

Report of Medical Superintendent, Leper Asylum, Hendala, *re* specific treatment of leprosy in 1925.

During the 1st quarter of the year there were 66 males, 47 females, total 113 patients, under treatment.

The attendance for treatment during that period was fairly satisfactory.

During the 2nd quarter of the year the number taking treatment were as follows :—83 males, 44 females, total 127.

In April, 1925, I went over to India to study the treatment of leprosy at Calcutta and a few other places, and on which I have submitted a full report on my return from India on May 24, 1925. Since then a large number of patients have come forward for treatment.

At the end of the year there were 243 males, 75 females, total 318 under treatment, out of 540, total number of patients in the asylum.

During treatment, 4 died of intercurrent diseases. One was granted home isolation and 3 had absconded leaving 310 under treatment.

The patients under treatment were of all ages and types and stages of the disease.

The attendance of the females for injections was more regular compared with that of the males.

I have used both plain Ethyl Esthers combined with 4 per cent. Cresote (E.C.) as well as the combination with Camphor and Olive Oil (E.C.C.O.). I find that E.C.C.O. is borne more easily by most patients even in larger doses than E.C.

With the new year I have commenced classifying all cases under treatment, on the new Case Sheets Form (Medical 381) and will do so every 3 months making up a file for each individual patient for ready reference.

The treatment has not been of sufficiently long duration to judge complete or permanent result.

Most of the patients, however, show a softening of the skin and a tendency for the healing of ulcers, absorption of tubercles, loss of a certain amount of numbness, slight loosening of contraction of the fingers and growth of nails where onychia had been marked before.

The results so far obtained as specified in the preceding paragraph are as follows :—

			Males.		Females.
Total under treatment	..	..	243	..	75
Marked improvement	..	..	66	..	11
Improvement	..	..	61	..	21
Slight improvement	..	..	25	..	13
No change	..	..	88	..	29
Died of intercurrent diseases	..	..	3	..	1
			243		75

The bad results noticed so far are that 3 cases developed nephritis and a number of other patients showed leptotic fever with the appearance of “Blood Boils” soon after the commencement of the injections. In both cases the treatment was immediately suspended, but it was recommenced in fever cases after the fever had subsided.

R. PFSTONJEE.

25. *Parangi (Framboesia or Yaws)*.—The number of hospital admissions was 4,897 with 19 deaths, as against 6,149 with 18 deaths in 1924. The decrease in the number of admissions to hospitals during the year was due to intensive campaigns by eight Itinerating Medical Officers in the Central, Southern, Eastern, North-Western, North-Central (2 Itenerating Medical Officers), Uva, and Sabaragamuwa Provinces, and the treatment of a large number of out-patients brought by headmen to and voluntarily seeking treatment at dispensaries and the out-patient departments of hospitals.

The distribution of the disease judged from hospital returns is shown in the following table :—

	1922.		1923.		1924.		1925.
General Hospital, Colombo..	306	..	436	..	445	..	312
Lunatic Asylum, Colombo ..	—	..	—	..	—	..	1
Western Province	1,499	..	770	..	485	..	486
Central Province	1,312	..	1,194	..	911	..	646
Northern Province	102	..	504	..	367	..	281
Eastern Province	791	..	646	..	404	..	446
Southern Province	5,085	..	2,672	..	1,123	..	591
North-Western Province	784	..	645	..	400	..	367
North-Central Province	594	..	696	..	584	..	483
Province of Uva	594	..	731	..	370	..	433
Province of Sabaragamuwa .	2,221	..	1,741	..	1,058	..	851
Railway Extensions	—	..	11	..	2	..	—
	13,545		9,748		6,149		4,897

The dispensary cases as regards Provinces were as follows :—

	1924.		1925.		1924.		1925.
Western	2,701	..	2,245	North-Western	13,023	..	10,833
Central	2,812	..	3,084	North-Central	17,748	..	15,502
Northern	818	..	840	Uva	1,011	..	1,354
Eastern	4,066	..	3,045	Sabaragamuwa	2,051	..	1,624
Southern	6,006	..	3,793				

The eight Itinerating Medical Officers treated a total number of 13,075 cases, and a large number of these patients attended a second and a third time, and 27,957 injections were given during the campaign in 1925, as against 17,852 cases and 33,052 injections in 1924.

Dr. J. A. E. Corea, a private practitioner, visited Bingiriya, Mahagama, Kanjukkulia, and Hettipola in the Chilaw District, but had to discontinue visiting these places as hardly any patients presented themselves for treatment. 43 cases were treated by him at Chilaw during the year with drugs supplied by Government.

26. *Plague*.—There were 68 cases (Colombo town 64, Kalutara 3, and Galle 1) during the year with 63 deaths, as against 153 cases with 145 deaths in 1924, 232 cases with 211 deaths in 1923, 160 cases with 150 deaths in 1922, and 187 with 171 deaths in 1921. Of the 68 cases reported, 25 males and 1 female were admitted to the Infectious Diseases Hospital, Colombo, 23 were bubonic, 1 septicaemic, 2 pastular. Of the 23 bubonic cases, 19 died, 12 had groin buboes, 11 axillary buboes. Of the recovered, 4 had groin buboes and 1 case which was pastular had no external buboes. The recovery percentage for the year is 19·2, same as that of the previous year.

27. *Port Health Precautions.*—During the year, 2,826 British and foreign steamers and 301 native sailing vessels called at the Port of Colombo and were inspected, as against 2,584 steamers and 297 sailing crafts in 1924, and 2,363 steamers and 285 sailing crafts in 1923. Sixteen steamers arrived infected, and were placed in strict quarantine. All sixteen were with smallpox. All the cases were landed and sent to the Infectious Diseases Hospital. Three vessels were kept in strict quarantine being dealt with as suspected vessels. There were 2 cases of smallpox among those under observation and were sent to the Infectious Diseases Hospital. Eight cases of suspected typhus fever and 1 case of cholera were landed during the year. Samples of water from water boats were taken periodically and sent for analysis. Boats in which the water was found unfit were cleared and cement washed again before being allowed to be used.

The number vaccinated during the year was 6,611 being mostly arrivals from India *viâ* Tuticorin and Mandapani. 1,088 cases were done at the Port Surgeon's Office and 5,523 at the Disinfecting Station. Disinfection of 165,510 persons and their clothing was carried out at the port disinfecting station, as against 152,934 the previous year.

At the port venereal clinic for seamen, 56 cases of syphilis were treated by intravenous injections in 1925, 61 in 1924, and 68 in 1923.

### SECTION III.—THE SANITARY BRANCH.

28. During the year, 416,208 premises were inspected, of which 109,753 were found insanitary and necessary action was taken, 10,190 prosecutions were entered for breaches of sanitary rules and regulations, and 7,348 convictions were obtained. The fines recovered amounted to Rs. 23,068·50. 11,860 notices were served calling upon householders to remedy sanitary defects; in the case of 10,349 of these, the requirements of the notices were voluntarily complied with, while in the case of the rest, persuasion was required.

In the following table the work done during the year is compared with that of the preceding year :—

	1924.	1925.
Number of premises inspected ..	391,617 ..	416,208
Number found insanitary ..	97,887 ..	109,753
Number of prosecutions entered ..	5,395 ..	10,190
Amount of fines realized ..	Rs. 13,403·50 ..	Rs. 23,068·50
Number of notices served to remedy sanitary defects ..	16,880 ..	11,860
Number of notices voluntarily complied with ..	13,107 ..	10,349

*Sanitary Conveniences: Public Latrines.*—During the financial year 1924–25, 22 public latrines were built by the Local Boards and Sanitary Boards throughout the Island. The location of the latrines is as follows :—

Western Province ..	4	Northern Province ..	5
Southern Province ..	3	North-Central Province ..	1
Central Province ..	7	Province of Sabaragamuwa ..	2

Government contributed a sum of Rs. 30,000 towards the cost of the above.

*Private Latrines.*—Number of private latrines built during the year in each province is as follows :—

Province.	Pits.		Dry-earth.		Total.	
	Completed.	Under Construction.	Completed.	Under Construction.	Completed.	Under Construction.
Western ..	7,439	5,153	461	174	7,900	5,327
Southern ..	3,628	2,621	30	29	3,658	2,650
Central ..	3,590	1,330	178	24	3,768	1,354
Sabaragamuwa ..	355	301	24	9	379	310
North-Western ..	—	—	8	21	8	21
Uva ..	76	15	4	1	80	16
Northern ..	—	—	—	—	—	—
Eastern ..	16	—	9	—	25	—

*Health Education.*—The training class for 130 Police Headmen, Vidane Arachchies, Vel-Vidanes, and others started at Weligama, in the Matara District by the Sanitary Superintendent in December, 1924, continued till the end of March, and an examination was held at Weligama school on April 7. Owing to the irregular attendance of the Headmen, due to their multifarious duties, only 32 sat for the examination, of whom 26 passed and certificates and monetary rewards were awarded to those who obtained 40 per cent. of marks and over.

A Public Health Section was opened at the Uva Agri-Horticultural Exhibition held at Badulla during May. Exhibits consisting of models of sanitary appliances, posters, diagrams, &c., conveying information on sanitary matters, live and mounted specimens of mosquitoes, their larvae and pupae, charts, diagrams, and maps showing the prevalence and distribution of malaria in the Island, eggs, larvae, pupae of the house-fly, charts illustrating its life-cycle and an exhibit demonstrating how flies contaminate food; preserved specimens of hookworm and other intestinal parasites; charts and posters of hookworm patients before and after treatment and various drugs used in hookworm treatment were displayed in this section.

This exhibition was opened by His Excellency the Acting Governor and attracted the attention of a large number of visitors including managers, principals, and teachers of schools, school children, and various officers engaged in public health work. Villagers who attended the show in large numbers were given free access and everything was minutely explained to them in Sinhalese and Tamil.

*Lantern Lectures.*—Lantern lectures on sanitation were delivered by Dr. S. F. Chellappah at Ratnapura under the auspices of the Social Service League and at Mannar and Pesalai at the request of the Assistant Government Agent, Mannar. This series of lectures is being continued.

*Infectious Diseases.*—The following infectious diseases were reported to this department which took necessary action in regard to prevention :—

Dysentery	..	..	983	Chickenpox	..	..	3,493
Plague	..	..	—	Diphtheria	..	..	5
Cholera	..	..	297	Measles	..	..	871
Smallpox	..	..	3	Phthisis	..	..	143
Enteric fever	..	..	824	Mumps	..	..	57

The above being contributed to as follows :—

Province.	Dysentery.	Plague.	Cholera.	Smallpox.	Enteric.	Chickenpox.
Western ..	502	—	—	—	684	2,049
Southern ..	452	—	—	—	111	797
Central ..	25	—	3	1	13	508
Northern ..	—	—	8	—	11	56
North-Western	—	—	—	—	—	17
Sabaragamuwa	—	—	2	—	2	38
Uva ..	4	—	1	2	3	28
Eastern ..	—	—	135	—	—	—
North-Central	—	—	148	—	—	—

*Dysentery.*—There has not been any unusual prevalance of this disease during the year under review, and the total number of eases reported shows a decrease in its incidencee, as compared with the previous year. Nearly all the eases occurred in more or less sporadie form, the Southern and Western Provincees contributing the majority. Akuressa, a notorious locality, where dysentery has always been endemic alone contributed 153 eases. This area suffers periodically from floods of the ever fluetuating river that passes by it and added to this, the unusually wet weather that prevailed during the year rendered mostly all the shallow wells, from which the village draws its water supply, liable to pollution.

Extreme poverty, poor housing eonditions combined with utter ignorancee of sanitary principles also plays a considerable part in the spread of the disease.

*Plague.*—No eases were reported from the areas within our jurisdiction. A small outbreak occurred within the Urban Distriet Council limits of Kalutara. Prompt action was taken by the Medieal Officer of Health, Kalutara Distriet, whose assistancee was sought by the Chairman, and the outbreak was nipped in the bud. There were only 3 eases in this outbreak.

*Cholera.*—In all 297 eases were reported, the majority being comprised of eases from outbreaks, which occurred at Trineomalce, Muttur, Tamankaduwa distriet, Murunkan, and Saindammaradu.

The total number from the outbreaks was 293, the remainder being eases reported from the different parts of the Island.

The first outbreak of cholera during the year was reported from Muttur, Eastern Provincee, in January ; next it was heard of at Marriehukaddi in February, and subsequently at Murunkan due to a ease from Marriehukaddi going there. The next outbreak occurred at Trineomalee in April, and then eases were reported in May from Meneville and Sungaville in the North-Central Provincee and Keliveddy and Toppur, investigation of which showed widespread infection in the Tamankaduwa distriet.

It has been established beyond doubt that the source of infection in all the outbreaks, viz., those of Muttur, Trincomalee, and Tamankaduwa distriet was from the Indian eoolies, probably carriers, employed on the railway traee to Trineomalee.

There is no endemic cholera in the Island and the ultimate source of all outbreaks may be safely ascribed to importation of infection from India.

It may be mentioned here that for the first time in Ceylon steps were taken to search for human carriers in epidemic work. This work was first carried out in the Trineomalce outbreak and subsequently in outbreaks in the other areas.

*Smallpox.*—Three eases were reported in all, 2 from the Provincee of Uva and the other from the Central Provice. All these eases occurred amongst Indians who developed the disease immediately after their arrival from India. Prompt measures were taken and no further eases occurred.

*Enteric ever.*—This disease appears to have been present all throughout the Island in more or less sporadie form. The total number of eases reported shows a decrease in the incidencee in comparison with the previous year, the Western and Southern Provincees contributing the major portion of the cases.

Overerowding and unsatisfactory housing eonditions amongst the poorer classes, the long duration of the disease, inadequate home isolation, and insanitary methods of disposal of exereta lead to the spread of the disease generally by contaet infection and by flies.

Measures adopted included inoeulation of contaets in addition to the usual preventive steps. The salutary effects of inoeulation in reducing the ease incidencee will be evident on a eomparison of the number of cases reported during the previous year and those for the year under review.

*Chickenpox.*—This disease appears to have prevailed to a greater extent than in the previous year, there being an increase of 1,659 eases. Several small outbreakes occurred both in the Western and Southern Provincees, and were confined to the rural areas. The eonditions that obtained in the village areas are ideal for the spread of any disease, partieularly of the type of chickenpox, and the two essential preventive steps, viz., isolation of patients and segregation of contaets were quite impraetieable in the majority of village homes.

*Disposal of Human Excrement.*—In the majority of the Sanitary Board and Local Board towns the dry-earth system of conservaney is in vogue, the night soil being trenched.

In the Western, Southern, and Central Provincees the dry-earth system is gradually replacing the pit latrines, and the work has been considerably extended.

The chief obstacle to the introduction of the dry-earth system is not only the initial expense, which the poor people have to undergo, but also the inability on their part to meet the monthly conservancy fee. In order to overcome the latter, the levying of a conservancy rate has been suggested and is under consideration.

In rural areas pit latrines are being gradually installed and the position as regards latrine accommodation in the villages, which have been in our charge for some time may now be considered satisfactory. In certain instances common latrines have been allowed, and in a few localities it has not been possible to get latrines built owing to the high level of the underground water.

Latrines of a more or less permanent type have been built in many places. In some instances, the latrines so built are seldom or never used, and this antipathy to the use of latrines appears to be the greatest obstacle that has to be overcome; but it is hoped that with the better education of the villager and the persistent and continuous efforts of this department, the people would be gradually accustomed to the use of latrines.

*Scavenging.*—Arrangements are in force in the various Local Board and Sanitary Board towns throughout the Island for the collection and disposal of household and town refuse. In the majority of these towns scavenging is done on contract, in a few by coolies employed by the Board. Considerable supervision has to be exercised for the efficient working of scavenging schemes.

As pointed out in previous reports the dumping of refuse and its use as manure for grass fields or coconut plantations, specially within town areas or their vicinity, is insanitary owing to the breeding of flies, which invariably occurs in these places. This in its turn leads to an increase in the incidence of fly-borne diseases which are so common in Ceylon. It would, therefore, be preferable to dispose of this refuse by incinerators, and this method is recommended for general adoption as has already been done in several towns of the Central Province with success. It will be a matter for regret if the more progressive Western Province should continue to lag behind the Central Province in this respect, the more so, as fly-borne diseases are endemic in this province.

*Domestic Water Supplies.*—During the year 57,878 wells were inspected. Of these 37,428 were found to be unprotected and liable to pollution. 2,793 wells were improved.

The sooner provision is made for pipe-borne supply of pure water at least to the larger Sanitary Board and Local Board towns, the better will be the health of these towns. Twenty-one samples of water were examined chemically by the Government Analyst and 2 samples bacteriologically by the Director, Bacteriological Institute. Of the samples examined 15 were found unfit for drinking purposes, and suitable action was taken to improve the source of supply.

*Licensed Trades.*—A more strict application of the regulations for controlling licensed trades has been made during the year. In the case of old standing licensed trades, a course of gradual improvement is insisted upon and each year brings them closer to the full requirements of the by-laws. However, in the case of new ones, licence is withheld till all the requirements of by-laws have been complied with.

The Suburban Dairies and Laundries Ordinance is now applicable to all the Sanitary Board and Local Board towns, but many boards have not yet taken advantage of this measure to get dairies supplying them with milk improved. The following Sanitary Board towns in the Western Province were proclaimed under the Ordinance in November :—Avisawella, Nugegoda, Veyangoda, Dehiwala, Mount Lavinia, Kirillapone, Gampaha, Egoda Kolonnawa, Wattala, Mabola, Cotta, Welikada, and Nawala.

There is still a large number of unlicensed laundries in the suburbs of Colombo, but it is almost impossible to prove that they wash for the city and consequently no legal action can be taken. However, an increasing number of applications for laundry licences is received and, when essential requirements have been complied with, licence is recommended.

The following is a list of applications for licences dealt with by the Sanitary Inspectors in the Western, Southern, Central, Sabaragamuwa, Northern, and North-Western Provinces :—

Name of Trade.	Number of Applications.		
	Received.	Recommended.	Not recommended.
Bakeries .. ..	375	300	75
Tea and coffee boutiques .. ..	940	829	111
Eating-houses .. ..	271	244	27
Public galas .. ..	62	52	10
Manure stores .. ..	33	31	2
Soap manufactories .. ..	5	2	3
Hide stores .. ..	5	5	—
Lime kilns .. ..	22	22	—
Brick kilns .. ..	30	29	1
Dairies .. ..	78	58	20
Cabook quarries .. ..	14	10	4
Plumbago sheds .. ..	15	13	2
Metal quarries .. ..	7	7	—
Public bathing places .. ..	7	7	—
Kraals for soaking cocoanut husks ..	15	15	—
Fibre dyeing .. ..	—	—	—
Butcher stalls .. ..	92	89	3
Fish stalls .. ..	61	58	3
Pork stalls .. ..	4	3	1
Fibre mills .. ..	6	4	2
Desiccating .. ..	8	7	1
Aerated water manufactories .. ..	2	2	—
Gravel quarries .. ..	1	1	—
Tanneries .. ..	3	3	—

*Milk Supply.*—195 samples of milk were examined by the Government Analyst at the request of this department, of which 127 were found to be adulterated. The adulteration usually consisted in the addition of water and the percentage of added water varied from 1 to 88 per cent. 101 offenders were prosecuted and punished, and fines amounting to Rs. 1,173·50 recovered.

*Town Planning.*—Besides his routine work, the Sanitary Engineer of the department carried out the following works for the various Board towns :—

Cadastral survey for town planning (a) Kalubowila East about 100 acres ; (b) Wattala about 150 acres.

Type plans were drawn of—

- (a) Conservancy cart drawn by hand ; (b) grain store amended.  
Plans, charts, and graphs were drawn inconnection with (a) Sanitary survey of Moratuwa ; (b) Sanitary survey of Vavuniya ; (c) Pearl Fishery Report ; (d) Cholera outbreak, Trincomalee ; (e) Cholera outbreak, Murunkan ; (f) Cholera outbreak, North-Central Province

*Building Construction.*—A public latrine of 12 seats was built at Kalubowila under the supervision of the Sanitary Engineer.

*Railway Sanitation.*—The work in connection with railway sanitation was allotted to each Medical Officer of Health in charge of the respective Province or district, and Dr. Kahawita, Medical Officer of Health, Railways, was transferred to Sabaragamuwa. The total number of Inspectors employed in railway sanitation is 11, including the Anti-Malarial Inspector.

They are in charge of the following sections :—

- (1) Maradana to Alutgama (including Mount Mary Bungalows, Dematagoda, Urugodawatta, &c).
- (2) Induruwa to Matara.
- (3) Baseline to Avissawella.
- (4) Avissawella to Opanake-Yatiantota.
- (5) Kelaniya-Kadugannawa.
- (6) Polgahawela-Talaimannar.
- (7) Madawachehi-Kankesanturai.
- (8) Peradeniya-Matale-Hatton.
- (9) Hatton-Badulla.
- (10) Ragama-Mundel.
- (11) Anti-Malarial work.

Summary of Work done—

(a) Of Stations.						
		Inspected.		Defective.		Improved.
Premises	..	2,705	..	355	..	205
Drains	..	2,022	..	222	..	135
Latrines	..	4,415	..	682	..	282
Mosquito breeding places	..	255	..	79	..	106
Water supply	..	2,059	..	327	..	106
Scavenging	..	2,189	..	326	..	231
Conservancy	..	2,651	..	350	..	267

(b) Of Bungalows.						
Premises	..	7,328	..	1,019	..	623
Drains	..	5,778	..	922	..	336
Latrines	..	7,211	..	1,007	..	331
Mosquito breeding places	..	407	..	106	..	289
Water supply	..	3,554	..	676	..	62
Scavenging	..	4,488	..	583	..	289
Conservancy	..	5,723	..	436	..	269

(c) Of Lines.						
Premises	..	5,167	..	1,185	..	748
Drains	..	3,142	..	846	..	442
Latrines	..	3,173	..	1,267	..	314
Mosquito breeding places	..	287	..	63	..	172
Water supply	..	1,774	..	442	..	43
Scavenging	..	2,991	..	572	..	284
Conservancy	..	2,452	..	373	..	221

Anti-Malarial Work—

- Area of premises cleared, 327,805 square feet.
- Pits dug to bury receptacles capable of holding water, 7, of a cubic capacity of 653½ cubic feet.
- Pits closed, 3 ; capacity, 4,920¼ cubic feet.
- Drains cleaned and graded of a length of 1,514 feet.
- Earth-work done with regard to above, 1,852 cubic feet.
- New drains, 3 ; length 314 feet.
- Earth-work done with regard to above, 444 cubic feet.
- Cement drains cleaned, 1 ; length 330 feet.
- Earth removed from same, 82½ cubic feet.
- Needle palm plants destroyed, 10.
- Water pits oiled, 2 ; area of same 1,062 square feet,

*Miscellaneous.*—During the year under review, the following special reports were submitted the officers of the department :—

- (1) Report on the sanitary survey of Moratuwa by Dr. S. F. Chellappah, at the request of the Chairman, Local Board, Moratuwa.
- (2) Report on the pearl fishery, Marichchukkadde by Dr. Chellappah.
- (3) Report on the epidemics of cholera at Trincomalee, Muttur, and Tamankaduwa district by Dr. Chellappah.
- (4) Sanitary survey of Vavuniya by Dr. Chellappah at the request of His Excellency the Governor.
- (5) Report on the outbreak of cholera at Murunkan by Dr. W. T. de Silva.
- (6) Report on the outbreak of cholera at Saindamaradu, Eastern Province, by Dr. F. N. Jayawardena.
- (7) Report on the sanitation of the Urban District Council area of Kalutara by Dr. F. N. Jayawardena, at the request of the Chairman, Urban District Council, Kalutara.
- (8) Report on the Incidence of Enteric Fever at Panadure by Dr. F. N. Jayawardena, at the request of the Honourable the Director of Medical and Sanitary Services.
- (9) Special reports as to the Disposal of Spent-wash from the Tambaravila distillery and the distilleries in the Kalutara District by Dr. F. N. Jayawardena, at the request of the Excise Commissioner and the Assistant Government Agent, Kalutara.
- (10) Report on Kataragama festival with regard to the sanitation there by Dr. B. C. Das Gupta.
- (11) Reports on burial grounds by the Medical Officers of Health, at the request of the Government or Government Agents.
- (12) Reports by the Medical Officers on sites for latrines and wells throughout the Island.

The following is a summary of the work done by the Medical Officers of Health in the areas in their charge :—

*Western Province, A Division.*—This district is that portion of the Colombo District north of the Kelani river. It comprises the Urban District Council of Negombo, the Local Board of Minuwangoda, eleven Sanitary Board towns, and the rest of the area divided into 29 rural areas.

The staff consists of 1 Medical Officer of Health, 1 Senior Sanitary Inspector, and 38 Inspectors. Nine Inspectors are in charge of the Board towns, the remainder being in charge of the rural areas.

*Arrangements for Local Government and Sanitary Work.*—These have been the same as in the previous years. There are several areas to the north of Colombo, where further sanitary control is badly needed. It is advisable to get these areas brought under the control of the Small Towns Sanitary Ordinance or at least under the operation of the Housing Ordinance.

*General Sanitary Work.*—142,078 premises inspected, of which 48,124 were found insanitary. 9,602 mosquito breeding places were detected and dealt with. 2,530 prosecutions were entered for breach of sanitary rules and 2,076 convictions obtained and fines amounting to Rs. 5,208·75 were recovered. 2,672 notices were served for remedying sanitary defects, of which 1,199 were voluntarily complied with.

*Infectious Diseases.*—The following infectious diseases were reported during the year and necessary action taken :—

Enteric fever	..	..	238	Cholera	..	..	—
Dysentery	..	..	203	Phthisis	..	..	52
Chickenpox	..	..	840	Diarrhoea	..	..	18
Smallpox	..	..	—	Diphtheria	..	..	3
Measles	..	..	333	Mumps	..	..	35
Plague	..	..	—	Continued fever	..	..	32

*Enteric Fever and Dysentery.*—There has been a great prevalence of these two diseases all throughout the district. But the figures for the Board towns are only 27 and 2 respectively. This low incidence for the towns may be ascribed to the continuous attention to sanitation that they have received at the hands of this department for the past several years.

The general sanitation of rural areas compares unfavourably with that of Board towns, hence the higher incidence of these diseases in such areas.

*Dairies and Milk Supplies.*—There are 4 licensed dairies, and 2 new dairies were recommended for licence. The bulk of the milk from these licensed dairies is brought to Colombo. Twenty three samples were taken and sent for analysis as follows : From licensed dairies 1, from unlicensed 22, found adulterated 19.

*Licensed Trades.*—Bakeries : Many improvements have been effected during the year. A few of the old bakeries are still defective, but here, too, improvements are being effected gradually.

Laundries : There was much difficulty experienced in getting dhobies, who wash for Colombo residents to obtain licences.

*Water Supply.*—The whole area is supplied from shallow wells. Improvements to wells are being systematically carried out in all Sanitary Board towns. Similar work cannot be carried out in rural areas, where a great majority are unprotected, owing to lack of necessary legislation. Further, the poverty of the people has also to be considered as an obstacle in the way of improvements being effected.

Provision of pipe-borne supplies for the towns and public wells for rural areas should be considered a paramount necessity. 34,042 wells were inspected, of which 27,245 were found unprotected, 2,123 wells were improved.

Housing.—New and reconstructed buildings—

				Number of Applications received.		
				New.	Reconstructed.	
(a) Dwelling houses	..	..	..	102	..	107
(b) Other buildings	..	..	..	117	..	95

All applications for buildings pass through the Medical Officer of Health. They are carefully scrutinized and made to conform to the Housing Ordinance. Some difficulty has been experienced with regard to access. It is hoped that greater attention will be paid to the matter of access to new buildings.

*Insanitary Houses.*—Eight closing orders were obtained, and 5 demolitions carried out. It is desirable to have a proper survey of the housing conditions and it is hoped that such a survey will be carried out during the year 1926.

*Scavenging and Disposal of Refuse.*—Scavenging in all the Board towns in this district is carried out by coolies engaged by the Board and is supervised by the Inspectors. Refuse is disposed of by dumping, but the method is far from satisfactory. Incinerators are recommended wherever possible.

*Conservancy and Disposal of Night Soil.*—All the Board towns with the exception of Seeduwa practise the dry-earth system, and the latrines are conserved by Board coolies supervised by the Inspectors. Night soil is disposed of by trenching, the trenching grounds being regularly inspected. 3,437 pit latrines were installed during the year, and 3,157 are under construction. 134 dry-earth latrines were also completed, and 48 are still under construction. Two new public latrines have been built, 1 at Paliyagoda and the other at Wattala.

*Drainage.*—More built drains are required in several Board towns. The lack of proper roadside drains prevents drains being provided to new houses.

*Western Province, B Division.*—This area consists of that portion of the Colombo District south of the Kelani river.

The staff consists of a Medical Officer of Health and 22 Sanitary Inspectors including the Railway Sanitary Inspector.

The district consists of 17 Sanitary Board towns and 6 rural areas consisting of 264 villages.

Yatiantota, which was supervised by the Medical Officer of Health, Western Province (B) is now controlled by the Medical Officer of Health, Sabaragamuwa.

During the year, 56,522 premises were inspected, of which 12,329 were found insanitary, and necessary action was taken.

2,065 prosecutions were entered for breach of sanitary rules and regulations, and 1,498 convictions were obtained. The fines recovered amounted to Rs. 5,510·75.

2,099 notices were served calling upon householders to remedy sanitary defects. In the case of 1,896 of these, the requirements of the notices were voluntarily complied with, while in the case of the rest persuasion was required.

In the following table the work done during the year is compared with that of the previous year:—

				1925.		1924.
Number of premises inspected	..	..	..	56,522	..	61,030
Number found insanitary	..	..	..	12,329	..	16,855
Number of prosecutions entered for breaches of sanitary rules and regulations	..	..	..	2,065	..	1,522
Amount of fines realized	..	..	Rs. 5,510·75	..	Rs. 4,071·25	
Number of notices served to remedy sanitary defects	..	..	..	2,099	..	3,125
Number of notices voluntarily complied with..				1,896	..	2,716

*Sanitary Conveniences.*—During the financial year 1924–25, 2 public latrines were built at Kalubowila and Kolonnawa.

Private latrines: 1,257 pits, 225 dry-earth ; total 1,482.

The necessity for building public latrines at Buthgomuwa and Dehiwela-Karagampitiya junction is urgent. The last named is developing into a busy centre, being the termination of the motor bus service to and from Colombo.

*Buildings—New and Reconstructed.*—887 building applications were dealt with and plans for 488 new buildings were approved of as conforming to requirements of the Housing Ordinance.

Forty closing orders and 21 demolishing orders were obtained during the year under review.

*Infectious Diseases.*—The following cases of infectious disease were reported by the Sanitary Inspectors in this area, and necessary action was taken to prevent their further spread :—

				1925.		1924.					1925.		1924.
Dysentery	..	65	..	106	Phthisis	..	..	41	..	38			
Plague	..	—	..	—	Mumps	..	..	7	..	1			
Cholera	..	—	..	—	Smallpox	..	..	—	..	2			
Enteric	..	223	..	276	Diarrhoea	..	..	4	..	2			
Chickenpox	..	555	..	255	Diphtheria	..	..	1	..	1			
Measles	..	120	..	95									

*Enteric Fever.*—This disease was prevalent throughout the year in almost all parts of the district. It is more or less endemic in centres like Mount Lavinia and Karagampitiya. Though cases occurred they did not assume the form of outbreaks. All necessary precautions were taken and special measures were adopted where necessary. Anti-typhoid inoculation was carried on amongst

the contacts wherever they were found willing to be inoculated. Thirteen prosecutions were entered for not reporting cases of infectious disease and in each case a conviction was obtained. The amount of fines realized was Rs. 95.

*Chickenpox.*—555 cases were reported. Schools were responsible in many instances for the spread of the disease. In such cases prompt action was taken to close them for such periods as was necessary.

*Domestic Water Supplies.*—In all the Sanitary Board towns with a few exceptions, which have also a pipe-borne supply, it can be stated that the source of supply is from wells. During the year under review much activity has been evinced in the improvement of wells. 423 existing wells were improved.

*Dairies and Milk Supply.*—During the year under review 28 applications were received, of which 13 were not recommended. Adulteration and illicit sale of milk in spite of the vigilance of the Sanitary Inspectors are being carried on.

If only the people would refuse to deal with such vendors the work of minimizing, if not entirely stopping, such adulterations and illicit sales, could be successfully carried on.

Seventy-two samples (30 from licensed and 42 from unlicensed dairies) were seized and sent for analysis, of which 39 samples were found adulterated, as against 37 samples and 26 adulterations for the preceding year. The percentage adulterated on the number seized is 54 per cent. The highest adulteration was 60 per cent. of water. In the majority of cases convictions were obtained, and fines amounting to Rs. 135 were imposed.

*Disposal of Human Excreta.*—In all the Board towns with the exception of Kosgama and Pugoda the dry-earth system of conservancy is in force. The existing cesspits are being gradually replaced by dry-earth latrines.

Construction of pit latrines is in force in rural areas. However, in some of the districts, which are subject to floods or where the sub-soil water is high, the installation of pit latrines cannot be enforced.

Night soil is disposed of by trenching. Where trenching grounds exist they are regularly supervised and properly maintained. Daily inspection of the trenching grounds by Sanitary Inspectors forms part of their routine work. Some of the trenching grounds are unsuitable and steps are being taken to secure other sites.

*Scavenging.*—In some Board towns scavenging is done on contract, and considerable supervision has to be exercised for efficient working thereof.

Refuse is disposed of by dumping, but as this method is unsatisfactory, arrangements have been made by the Sanitary Board to erect a number of incinerators.

*Licensed Trades.*—The following is a statement of applications for licences dealt with :—

Name of Trade.	Number of Applications.		
	Received.	Recommended.	Not recommended.
Bakeries ..	75	59	16
Tea and coffee boutiques ..	267	194	73
Eating-houses ..	51	41	10
Public galas ..	6	3	3
Manure stores ..	3	3	—
Soap manufactories ..	1	—	1
Hide stores ..	1	1	—
Lime kilns ..	3	3	—
Brick kilns ..	1	1	—
Dairies ..	28	15	13
Cabook quarries ..	8	4	4
Plumbago sheds ..	13	12	1
Metal quarries ..	6	6	—
Public bathing places ..	2	2	—
Kraals for soaking coconut husks	1	1	—
Fibre dyeing ..	—	—	—
Butcher stalls ..	17	16	1
Fish stalls ..	5	5	—
Pork stalls ..	1	1	—
Fibre mills ..	—	—	—
Desiccating mills ..	—	—	—
Aerated water manufactories..	—	—	—
Gravel quarries ..	1	1	—
Tanneries ..	3	3	—

*Kalutara District.*—This district was separated from the Galle District during the year, the line of demarcation being Bentota river. Railway sanitation from Maradana to Alutgama was placed in charge of Medical Officer of Health, Kalutara, from December, 1925.

Composition of District : Seven Sanitary Board towns, Panadure and Kalutara Urban District Council areas, 12 rural areas.

The Medical Officer of Health of the district was nominated an *ex officio* Member of the Sanitary Board of Kalutara towards the latter part of the year.

*Staff.*—One Medical Officer of Health with office in Colombo, 18 Sanitary Inspectors including 1 in charge of the railway stations. Five Sanitary Inspectors are in charge of Sanitary Board towns. The remaining 12 Sanitary Inspectors are in charge of rural areas.

*Summary of House Inspections.*—46,192 domiciliary inspections done ; 15,450 premises found insanitary, necessary action taken ; 2,151 prosecutions for breaches of sanitary rules and

regulations were entered and fines recovered amounted to Rs. 3,156 ; 1,280 notices were served to remedy sanitary defects ; 524 of these were voluntarily complied with.

Infectious Diseases—

Enteric fever	..	..	223	Phthisis	..	..	22
Dysentery	..	..	234	Pneumonia	..	..	3
Continued fever	..	..	17	Mumps	..	..	7
Chickenpox	..	..	654	Plague	..	..	—
Measles	..	..	135	Cholera	..	..	—
Diarrhoea	..	..	20	Smallpox	..	..	—

There is great prevalence of typhoid and dysentery. Only 13 cases of enteric and 2 dysentery were reported from Sanitary Board towns, a fact which may be ascribed to work done by this department during the past years relating to the sanitation of these towns.

Enteric Fever.—The figures given are not a reliable index owing to non-notification and faulty diagnosis, especially in rural areas. The disease was prevalent throughout the year in almost all parts of the district occurring in more or less sporadic form. Contributory factors to the prevalence of enteric fever are—

- (1) Bad housing conditions, home isolation being impossible and in consequence contact infection being very common.
- (2) Poverty, ignorance, low standard of resistance of these people.
- (3) Insanitary methods of disposal of infective excreta, flies, unprotected water supply, and carriers.

Dysentery.—The above remarks apply in the case of this disease also.

Phthisis.—Twenty-two cases were reported, but this is not a true index of the prevalence of this disease. The incidence of the disease is influenced by poverty, overcrowding, and bad housing conditions.

Chickenpox.—There was an undue prevalence during the year. In many instances information was received late preventing early precautionary measures being taken.

Water Supply.—No pipe-borne water supply is available. The 2 main sources are wells and the river. Steps are being taken to improve these wells, but progress is slow.

During the year 142 private wells were improved and several sites for public wells were inspected and reported on.

Disposal of Human Excrement.—In the Sanitary Board areas the pail system of conservancy is in vogue. Night soil is disposed of by shallow trenching. Drum carts and stock buckets should be scrapped and replaced by the more sanitary type of hand cart. In rural areas night soil is disposed of by means of pit latrines. During the year 4,177 pit latrines and 130 pail latrines were installed.

Sanitary Conveniences.—Public pail latrines should be installed at Pokunuwita, Maggona, and Matugama. Funds were obtained for public latrines at Beruwala and Wadduwa. The installation of public pit latrines in rural areas where festivals, &c., take place periodically, such as at Bandara-gama and Bellana, is also desirable.

Scavenging and Disposal of Refuse is done on contract or by coolies employed by the Board. Rubbish is disposed of by dumping. Incinerators should be installed where funds permit. A more sanitary type of cart is needed in some Sanitary Board towns. The want of adequate staffs and proper carts has handicapped the work in certain towns. Whole-time scavenging coolies are recommended for Ingiriya, Matugama, and Maggona.

Licensing Trades—

Name of Trade.		Number of Applications.			
		Received.	Recommended.		Not recommended.
Bakeries	..	75	..	53	.. 22
Tea and coffee boutiques	..	43	..	31	.. 12
Eating-houses	..	9	..	8	.. 1
Public galas	..	3	..	3	.. —
Manure stores	..	5	..	4	.. 1
Lime kilns	..	1	..	1	.. —
Cabook quarries	..	2	..	2	.. —
Plumbago sheds	..	1	..	—	.. 1
Butcher stalls	..	8	..	8	.. —
Fish stalls	..	1	..	1	.. —

Bakeries.—The majority are small dwelling houses adapted to the needs of a bakery. Bakers are unwilling to effect any radical alterations to buildings either rented out or leased. However, several bakers were forced to effect improvements as their licences were not recommended. In rural areas much improvement cannot be effected as requirements of the Nuisance Ordinance are too inadequate to deal with these places.

Eating-Houses and Tea Boutiques.—The general cleanliness of these is of a low standard. There is a strong suspicion that food consumed in these premises is one of the factors in the spread of enteric fever and other bowel diseases.

Laundries are not licensed, it is recommended that they be licensed so that they can be better controlled.

Dairies.—None licensed, licensing of all dairy premises is recommended. During the year 11 samples of milk were seized and 9 were found adulterated.

Housing.—There are a good many insanitary dwellings. The Housing Ordinance should be strictly enforced regarding new buildings. Congested areas should be brought either under the Small Towns Ordinance or declared under the Housing Ordinance, especially Ingiriya, Matugama, and Alutgamweediya. 271 building applications were dealt with, and plans for 100 new buildings were approved.

Drainage.—Built roadside drains are urgently needed in most of the towns ; the lack of these interferes with provision of drainage to private houses.

*Central Province.*—Staff consists of 1 Medical Officer of Health stationed at Kandy, 1 Supervising Sanitary Inspector, and 22 Sanitary Inspectors. Within the district are 29 Sanitary Board towns, 3 Local Board areas, and 1 Urban District Council area. In the month of November of the year under review, the Inspectors stationed at Mawanella and Rambukkana were placed under the supervision of the Medical Officer of Health, Sabaragamuwa.

*Summary of Work Done.*—During the year 56,980 premises were inspected exclusive of premises in Local Board areas. Of these 12,243 were found to be insanitary and necessary action was taken to remedy the defects. 1,245 prosecutions were entered for breach of sanitary rules, and 858 were convicted. The total amount recovered as fines was Rs. 4,002.

4,327 notices were served to remedy sanitary defects; 1,155 were complied with and in the rest prosecution was necessary. It has been the endeavour of officers to get the necessary work done by persuasion, failing which notices are served.

In the following table the work done during the year is compared with that of the previous year :—

	1924.	1925.
Number of premises inspected .. ..	—	56,980
Number of premises found insanitary .. ..	—	12,243
Number of prosecutions for breach of rules .. ..	1,073	1,245
Fines realized .. ..	Rs. 4,700	Rs. 4,002
Notices served .. ..	1,600	3,389
Notices voluntarily complied with .. ..	1,153	1,155

*Prosecutions in Local Board Towns—*

Number of prosecutions .. ..	545
Number of convictions .. ..	451
Number warned .. ..	32
Number discharged .. ..	7
Fines .. ..	Rs. 2,561

*Disposal of Human Excrement.*—In the Urban District Council, Local Board, and Sanitary Board areas the dry-earth system is in vogue. Night soil is disposed of by trenching. Much difficulty is experienced and opposition encountered in regard to the installation of dry-earth latrines, owing to the inability of the poorer classes to pay the conservancy fee.

*Scavenging.*—This is done by contract and by coolies employed by the Board; in the latter case the work is supervised by the Sanitary Inspectors. Both methods work satisfactorily with proper supervision. In 32 towns, including the Hydro-Electric Scheme area, the rubbish is disposed of by incineration and tipping. Two incinerators were built at Teldeniya and Kadugannawa. Incinerators have been recommended and votes sanctioned for them at Hatton, Hangu ranketa, Palapatwela, Dambulla, Panwila, and Maskeliya.

*Sanitary Conveniences.*—During the year 5 public latrines were constructed in the following places :—

Hatton .. ..	1	Wattegama .. ..	1
Dikoya .. ..	1	Dambulla .. ..	2

Sites have been selected for the construction of 2 more public latrines at Hatton and at the Norwood end of Dikoya town. It has also been decided to provide public latrines at Matale and Mailapitiya. With the completion of these 4 latrines the Province will have a sufficient number of latrines for its present needs.

Some of the existing latrines are not of a satisfactory type, but are being gradually improved. Two public latrines at Gampola were condemned and 2 new ones are to be constructed, also 1 at Hatton, which, too, is to be replaced by a new one.

*Private Latrines.*—3,768 latrines were built as compared with 2,491 for the previous year, 178 were of the pail type. Dikoya estate has put up 3 latrines of 7, 5, and 2 seats, and has undertaken to provide the rest during 1926. Darawela estate has provided 3 latrines for their kaddies in Dikoya town. Glenlitt estate which was at first reluctant has eventually after much correspondence agreed to construct latrines and start the work early. Brownlow, Devon, Mount Vernon, Norwood, and Ragala estates have also constructed latrines and kaddies at Huluganga have been provided with latrines.

*Trenching Grounds.*—Of the trenching grounds the one at Dikoya is unsatisfactory; it is a marshy plot of land situated between two waterways.

*Drainage.*—The majority of the towns are provided with adequate cement drainage. In some instances they need extensions. Dambulla, Kaudupelella, Mailapitiya, Panwila, and Ulapane require built masonry drains.

Money has been voted for extensions of the drains at Teldeniya, Maskeliya, and Padiyapelella.

Back pavements and drains to houses in small towns have been insisted on in the case of all new buildings. Fair progress has been made in regard to such drains and pavements in the following towns :—Norwood, Rosita, Wooten, Ragalla, Nanu-oya, Kadugannawa, Dimbulla, Wattegama, Teldeniya, Hangu ranketa, Talawakele, Pundaluoya, and Rattota.

*Water Supply.*—During the year considerable work in this direction has been done in regard to the improvement of supplies both in the towns and in the rural areas. Schemes which had been under discussion for several years are at last on the verge of realization.

At Nawalapitiya, during the course of the year the supply was augmented by the laying of the 6-inch main from the intake to the reservoir at a cost of Rs. 1,300, and a further sum of Rs. 7,500 has been voted for the laying of larger pipes from reservoir to town.

Gampola: The supply continues to be inadequate, but steps have been taken to remedy this, and I expect to see the completion of this scheme before the end of 1926. Water from certain springs is to be pumped up to a reservoir at Amaluwa Hill.

The supply at Dikoya, too, is to be augmented.

Matale: Here, too, the supply is inadequate during the dry months. A scheme is afoot to augment the supply by pumping water from two springs to the reservoir. The water in one was found to be satisfactory on examination. The railway has undertaken to contribute Rs. 20,000.

Of the remaining towns, Lindula, Bogawantalawa, Galaha, Padiyapelella, Kaudupelella, Madawela, Dambulla, Hanguranketa, and Ulapane have satisfactory and adequate water supplies. The supply to the following towns has been found to be unsatisfactory or inadequate, and schemes are afoot to either augment or protect the supply as the case may be:—Aluvihare, Palapatwela, Rattota, Kotagala, Pussellawa, Mailapitiya, Huluganga, Panwila, Teldeniya, Norwood, Wattegama, Kadugannawa, Ragalla, Kandapola, Nanu-oya, Pundaluoya, Holbrook, Tillicoultry, Dimbulla, and Talawakele.

*Licensed Trades.*—An increase in the number of licensed trades premises has been noticed during the year as compared with the previous years, especially in respect of bakeries, tea and coffee boutiques, and eating houses.

*Bakeries in Towns.*—Radical improvements have been effected to a good many existing bakeries such as enlargement of kneading room, provision of new ovens where they open directly into kneading rooms. In addition, other minor improvements have been carried out such as cementing of floors, provision of sky lights and windows, ceilings, stands for flour, &c.

*Bakeries in Rural Areas.*—The majority are in an insanitary condition, the Ordinance is too inadequate to effect radical improvements.

*Tea and Coffee Boutiques and Eating-Houses.*—The majority are fairly satisfactory. In respect of these, too, improvements have been gradually effected.

*Meat Stalls.*—Satisfactory. In rural areas since the practice of applications being referred to the Medical Officer of Health for recommendation has been followed, every effort has been made to get these places conform to the requirements.

*Dairies and Milk Supply.*—A good deal of work has been done in this direction. 125 samples were examined, of which 57 were found adulterated. Dairies outside the Municipal limits of Kandy supplying milk to the residents of the town which originally were under the control of the Medical Officer of Health, Municipality, are to be declared under the Suburban Dairies and Laundries Ordinance of 1908, and will henceforth be under our control. At Matale, too, there was very little, if any, control, and on representations being made, these, too, are to be brought under the above Ordinance. Laundries, satisfactory.

*Public Markets.*—A new market was built at Maskeliya and will be in occupation in February, 1926. Steps are being taken to have new markets constructed at Talawakele, Gampola, Nawalapitiya, and Kadugannawa.

*Granaries.*—The granaries at Matale have not proved a success to date. Those built are still unoccupied. By-laws have been passed prohibiting the sale of rice and other grains except in rat-proof granaries or bins, but these have not yet been put into force. Those at Nawalapitiya are in use.

*Infectious Diseases.*—With the exception of 3 cases of cholera and 3 of smallpox, all of which were imported, no cases of infectious disease of serious nature occurred in the Province.

*Buildings New and reconstructed.*—It has been the aim of this department to ensure that all new buildings conform with the requirements of the Housing Ordinance. However, at Nawalapitiya and Hatton, the rules have been somewhat relaxed by the Chairman in that buildings were permitted to be constructed without an intervening air space being provided. This was done in order to prevent undue hardship being brought on the landed proprietor as the value of land in the bazaar area of the town is very high. The majority of the old buildings in the bazaar area of Hatton are most insanitary; the same remarks apply to the tenements at Glenlitt, Maskeliya. This matter has been reported to the Local Board year after year, but with no effect whatever. This “Wait and see” policy would be most disastrous were an epidemic to break out, in which case the whole blame will be attributed to those responsible for permitting this state of affairs to exist.

Both at Hatton and Maskeliya, closing orders were obtained on a certain number of houses. It is recommended that unless there is a likelihood of the Local Government Bill coming into operation in the near future, that more small townships be brought under the operations of the Small Towns Sanitary Ordinance.

The following are the places that should be declared:—Hydro-Electric Scheme area, Naikawala, Ukuwela, Naula, Galagedera, Ampitiya, Galpila, Upper Pundaluoya, St. Lenards, Elukwatta, and Palugama.

*Rural Sanitation.*—The main work of the Inspectors in the rural areas is the supervision of latrine installation, attention to general cleanliness of premises, and taking action when infectious disease occurs.

There are 4 Inspectors solely in charge of such work, other rural areas being in charge of town Inspectors. Nine more Inspectors are recommended for the following rural areas:—Madugoda, Pottepitaya, Nugawela, Deltota, Naula, Elukkumbura, and Nildandahena.

*Southern Province.*—The Staff consists of 1 Medical Officer of Health with headquarters at Galle, 1 Supervising Sanitary Inspector also stationed at Galle, and 21 Sanitary Inspectors.

Summary of Work Done—

Number of premises inspected	..	59,303	Number of convictions	..	503
Number found insanitary	..	12,074	Number discharged	..	15
Number of notices served	..	2,220	Fines realized	..	Rs. 846.75
Notices voluntarily complied with	..	1,400	Mosquito breeding places	..	1,024
Number of prosecutions	..	640	Faecal pollution dealt with	..	23

*Latrine Construction—*

	Dry-earth.	Pits.		
Number of latrines constructed ..	30	3,628	Number prosecuted ..	1,047
Number repaired ..	2	111	Number convicted ..	324
Number of pits converted into dry-earth ..	5	—	Fines realized ..	Rs. 738
Number under construction ..	29	2,621	Number discharged on completion of latrines ..	329
			Number acquitted ..	85
			Number withdrawn ..	8

*Inspection of Trades—*

<b>Bakeries—</b>			<b>Meat Stalls—</b>		
Number inspected ..	..	66	Number inspected ..	..	6
Found breaking rules ..	..	40	Number insanitary ..	..	3
Notified ..	..	28	Number prosecuted ..	..	3
Prosecuted ..	..	14	Number convicted ..	..	1
Convicted ..	..	13	Fines ..	..	Rs. 25
Fines ..	..	Rs. 140	<b>Slaughterhouses—</b>		
<b>Tea Boutiques—</b>			Number inspected ..	..	4
Inspected ..	..	119	<b>Fish Stalls—</b>		
Found insanitary ..	..	14	Number inspected ..	..	11
Notified ..	..	8	Number insanitary ..	..	1
Prosecuted ..	..	6	Number prosecuted ..	..	6
Convicted ..	..	6	Fines ..	..	Rs. 15
Fines ..	..	Rs. 24·50	<b>Laundries—</b>		
<b>Eating-Houses—</b>			Number inspected ..	..	21
Inspected ..	..	13	Number insanitary ..	..	2
Found insanitary ..	..	4	Number prosecuted ..	..	16
Notified ..	..	8	Number convicted ..	..	15
Prosecuted ..	..	5	<b>Husk-pits—</b>		
Convicted ..	..	5	Number inspected ..	..	792
Fines ..	..	Rs. 42·50	Number insanitary ..	..	6
<b>Dairies—</b>			Number notified ..	..	1
Number inspected ..	..	10	<b>Quarries—</b>		
Number insanitary ..	..	2	Number inspected ..	..	4
Number prosecuted ..	..	9	<b>Fibre Stores—</b>		
Number convicted ..	..	8	Number inspected ..	..	7
Number acquitted ..	..	1			
Fines ..	..	Rs. 35			

*Infectious Diseases—*

<b>Chickenpox—</b>			<b>Enteric—</b>		
Number visited ..	..	797	Number visited ..	..	111
Number failed to report ..	..	75	Number fatal ..	..	30
Number prosecuted ..	..	39	Number failed to report ..	..	7
Number convicted ..	..	36	Number prosecuted ..	..	7
Fines ..	..	Rs. 280	Number convicted ..	..	5
			Fines ..	..	Rs. 27·50
<b>Dysentery—</b>			<b>Pneumonia—</b>		
Number visited ..	..	452	Number visited ..	..	9
Number fatal ..	..	94	Number fatal ..	..	4
Number failed to report ..	..	4	<b>Continued Fever—</b>		
Number prosecuted ..	..	2	Number visited ..	..	16
Number convicted ..	..	2	Number fatal ..	..	4
Fines ..	..	Rs. 2	<b>Phthisis—</b>		
			Number visited ..	..	21
<b>Measles—</b>			Number fatal ..	..	11
Number visited ..	..	65	<b>Mumps—</b>		
			Number visited ..	..	6

*Buildings—*

	Number of Applications received.	Number of New Buildings constructed
Galle District ..	288	62
Matara District ..	381	91
Hambantota District ..	93	48

*Insanitary Buildings.*—Number dealt with: 8 Galle District, 10 Matara District, 6 Hambantota District.

*Water Supply.*—The water supply in the case of all areas both those under local authorities and otherwise is from unprotected wells. In the case of some rural areas water is also obtained from the river. In general, the water supply is inadequate in quantity and not wholesome in quality.

There is a proposal to supply the towns of Tangalla and Beliatta with a proper water supply. The Sanitary Board towns of Ambalangoda and Weligama are large and wealthy enough to have a proper water supply. In certain rural areas of the Matara District, especially towards Akuressa the water of the wells is considered to be responsible to a great extent for the endemicity and periodical outbreaks of dysentery and other bowel diseases.

*Scavenging and Disposal of Town Refuse.*—Scavenging in the Galle District has been done by contract, but it is proposed to employ the Board coolies at Dodanduwa and Hikkaduwa in 1926, while at Ambalangoda it will still be done by contract.

In the Matara District the contract system was dispensed with and work was done by the Board coolies supervised by the Sanitary Inspector.

In the Hambantota District the work is done by contract at Tangalla and Beliatta, but at Hambantota it is done by the Board coolies.

Refuse is stored in covered receptacles. Disposal of refuse in all towns is by dumping. Dumping grounds have been maintained in a satisfactory state. In certain towns the refuse is sold to private parties, who remove it for reclaiming low lying land. These people have caused a nuisance by not satisfactorily disposing of refuse. Incinerators are recommended, but owing to lack of funds they cannot be built.

*Disposal of Human Excreta.*—In the Galle District the dry-earth system prevails in the 3 Sanitary Board towns of Ambalangoda, Hikkaduwa, and Dodanduwa. There are many public dry-earth latrines in the towns, there being in Dodanduwa alone 8 such latrines.

In the rural areas latrines are of the pit type, of which the number constructed during the year is 2,537 and the number under construction is 2,245. There is one dry-earth public latrine at Ahangama.

In the Matara District private dry-earth latrines were unknown in the Sanitary Board towns of Weligama and Dondra until the middle of the year. Since then 7 dry-earth latrines have been constructed and 11 are under construction.

In Weligama there are 15 public latrines, which is a striking feature. It is considered that their existence is responsible for the dearth of private dry-earth latrines. The practice of putting up too many public latrines should be discouraged as it hinders not only the construction of private latrines, but also the growth in the people of the sense of individual responsibility in this direction.

In rural areas pit latrines are usual except for 2 public dry-earth latrines at Denepitiya and Polatumodera, where difficulty of obtaining conservancy coolies has led to complaints against them.

In Hambantota District, in the Sanitary Board towns of Tangalla and Beliatta the only dry-earth latrines there are, are the public latrines. Individual latrines are of the pit type.

At Hambantota the only dry-earth latrines are the public ones, of which there are 7, while an 8th is under construction. A difficulty experienced in the construction of private latrines is the lack of access to them, the remedy proposed is the opening out of back lanes. The number of latrines built is 2, and the number under construction, 4.

In rural areas a few pit latrines exist and are used, but in the majority of instances surface pollution takes place.

*Disposal of Night Soil.*—In all Sanitary Board towns trenching grounds exist. Those at Hikkaduwa and Dodanduwa are adequate and satisfactory. That at Ambalangoda is thick with night soil and another is needed.

At Ahangama, Denepitiya, and Polatumodera trenching takes place behind the public latrines. At Dondra and Weligama suitable grounds exist. At Tangalla trenching is carried on behind the latrines and is unsatisfactory ; 2 new trenching grounds have been selected. At Hambantota a trenching ground is used as well as the land behind the two public latrines. The work is satisfactorily done.

Public Latrines—

Number of Public Latrines existing.			Number of Buckets.			Number built.			Number of Buckets.		
			Male.	Female.					Male.	Female.	
Galle District—											
Ambalangoda	8	..	34	..	28	..	—	..	—	..	—
Hikkaduwa ..	6	..	16	..	16	..	1	..	6	..	—
Dodanduwa ..	8	..	18	..	20	..	—	..	—	..	—
Ahangama ..	—	..	—	..	—	..	1	..	6	..	—
Matara District—											
Weligama ..	15	..	34	..	37	..	—	..	—	..	—
Denipitiya ..	1	..	5	..	5	..	—	..	—	..	—
Polwatte ..	1	..	5	..	5	..	—	..	—	..	—
Dondra ..	4	..	11	..	11	..	—	..	—	..	—
Hambantota District—											
Hambantota ..	7	..	15	..	24	..	1	..	—	..	—
Tangalla ..	4	..	12	..	12	..	—	..	—	..	—

Portable pit latrines are recommended for rural areas.

During the year 20 sites for public pit latrines in rural areas have been inspected. A few communal mound latrines are recommended for water logged places in rural areas.

*Drainage.*—Galle District: Ambalangoda is fairly well provided with masonry drains along the main road. The market area is also well provided. Other roads should be taken up.

Dodanduwa is properly provided with drainage along the main road.

In Hikkaduwa the side drains terminate abruptly causing stagnation at the end of the drains.

Roadside drains are needed for Ahangama and Kurundugahahetekma.

Services of coolies are required to keep drains flushed and clean.

Matara District: Although the main roads of Weligama have been provided with a set of well built drains the minor roads lack them to facilitate better scavenging.

Dondra needs well built masonry drains at the market place and also along the Matara-Tangalla road.

Other bazaar areas requiring efficient drainage are Mirissa, Gandara, Dikwella, Kottegoda, Walasgala, Akuressa, and Tibbotuwawa.

Hambantota District: Tangalla has a set of well built drains along its main road, but the market place and the road leading from it require attention.

Hambantota has well built side drains along its chief roads. There are few more roads that require drains. These have been inspected and Government help is expected in their construction.

*Public Markets.*—The following is a list of public markets in the Southern Province. All except 2 in Galle District and 3 in Matara District are owned by the local authority.

Galle District: Ambalangoda 1, Watugedara 1 (private), Dodanduwa 1 (abandoned), Ahangama 3 (1 private), Baddegama 1 (not opened yet).

Matara District : Matara 2 (private), Denepitiya 1, Mirissa 1 (private), Akuressa 1, Weligama 2, Dikwella 2, Dondra 2.

Hambantota District : Hambantota 1, Tangalla 1, Ambalantota 1.

The Assistant Government Agent has commenced proceedings for acquiring sites for new markets, and during the latter half of the year, sites for 8 markets were inspected at Walgama, Kumbulgama, Deniyaya, Kotapola, Urabokka, Mirissa, Morawaka, and Deviture.

*Public Galas.*—There are 15 public galas in the Province, over which constant supervision is maintained.

Owing to the existence of by-laws the galas in urban areas are better controlled than those in rural areas. In almost all, considerable improvements are necessary.

*Burial Grounds.*—All the Sanitary Board towns of the Province have public burial grounds except Dondra in which town burials take place in compounds regardless of proximity to water supplies, a practice which should be stopped by the provision of suitable burial grounds. Land should be acquired to serve as burial grounds for a group of villages around it.

Sites selected during the year for burial purposes in the Matara District are at Galbokka, Boragama, Malimboda, Kamburugamuwa, and Dondra.

*Buildings and Building Applications.*—All building applications from the Sanitary Board towns with the exception of Hikkaduwa, where a non-departmental Inspector is stationed are passed through the Medical Officer of Health.

In all the towns insanitary dwellings are gradually being dealt with. Weligama was inspected by the Chairman and Medical Officer of Health to see how far the plans conceived by the former to relieve the congestion of the slum area in Karaweediya road were workable. It is proposed to open 2 new cross roads from the Galle-Matara road towards the seabeach and also to acquire land on the outskirts of the town near Palena for housing people now living within the slum area. This scheme when carried out will improve the sanitary condition of the congested parts and facilitate dry-earth conservancy.

In Dondra a similar scheme has been planned, but being a poor town a longer time will be required for plans to materialize.

In Tangalla and Hambantota congestion prevails in the Muslim quarters, to relieve which, a scheme similar to that of Weligama is required.

*Anchylostomiasis Campaign Work in the Province.*—The Anchylostomiasis Campaign which was started in September, 1924, in Weligama korale continued till August 26, 1925, when the staff was withdrawn for work elsewhere.

Sanitary lectures were delivered and prizes awarded to police officers who took a keen interest in the work.

The campaign produced quite satisfactory results in that the people were instructed as to the cause and prevention of the disease, in the individual benefit derived from treatment, and in reduction of soil pollution of the area.

*Infectious Diseases.*—In the year under review there were no cases of serious infectious disease such as smallpox, cholera, or plague. The less serious infectious diseases occurred mostly in a sporadic form from time to time during the year, but there were outbreaks of chickenpox and dysentery.

Chickenpox : Total number of cases reported in 1925 is 797, as against 316 of the previous year, they were mostly sporadic cases except the 3 small outbreaks that occurred in Talpe and Hikkaduwa in the Galle District and in Mirissa in the Matara District. These three outbreaks contributed 288 cases.

Owing to absence of any strict laws controlling the handling of the disease and also to its being almost a non-fatal one, it is difficult to control its spread once it is introduced into a village area. The conditions that obtain in a village area of the Island are ideal for the spread of any disease, particularly, as the two chief preventive steps, namely, isolation of patient and segregation of the contacts are practically ruled out in a village house.

Dysentery : Total number of cases of dysentery reported for the year is 452 with total fatality of 39, as against 231 with a fatality of 14 in the previous year. Of these 452 cases, the Galle and the Matara Districts contributed 264 and 187 respectively. In the Galle District they were almost all sporadic cases, and in no area did the disease assume any size of an outbreak.

In the Matara District, Akuressa, the notorious locality, where dysentery has been always endemic, alone contributed 153 cases, the rest being distributed over the remaining part of the district. Akuressa area as is well known, suffers periodically from floods of the ever-fluctuating river that passes by it, and in addition, the unusually wet weather that prevailed during the year rendered all surface and shallow wells from which the drinking water of the village was drawn polluted. It was notified that with each flood the number of cases reported from the area went up, and ordinary preventive measures adopted during the outbreak had little effect in controlling the spread of the disease. The only remedy is the improvement of the water supply by provision of a sufficient number of protected wells.

Enteric fever shows a reduction this year as compared with the preceding year, the total cases reported being 111 with fatality of 30, as against 142 with fatality of 41. These are all sporadic cases reported from time to time from different areas of the Province. The Galle District contributed 82 and the Matara District 29, as compared with 106 and 36 respectively for the previous year. In no instance was the disease prevalent as an outbreak.

Measles also show a reduction compared to previous year, the number being 65 for 1925 and 85 for the year previous.

Mumps : Total cases 6, as against 13 in 1924.

Continued fever : Total cases 16, as against 14 in 1924.

Phythisis : Total cases reported 21, of which 11 proved fatal.

It will be seen from above that except for the small outbreaks of dysentery at Akuressa in the Matara District and of chickenpox in the Galle District the general health of the Province has been very satisfactory so far as infectious diseases are concerned.

In the present condition of the villages and the circumstances of the people, their housing and economic difficulties, their ignorance of the rudiments of sanitation, adequate isolation and segregation is rendered impossible, and the control of outbreaks of infectious disease is rendered difficult with the result that they are unduly prolonged.

*Trades.*—Non-offensive trades in Sanitary Board towns are controlled by regulations framed under Ordinance No. 18 of 1892. Those in the rural areas are not capable of control beyond the enforcement of general cleanliness under Ordinance No. 15 of 1862. The want of a Board of Health in the Province has rendered even this a difficult task.

The regulations in force in the Galle District were repealed and a set of new by-laws passed in July, 1924, were given a fair trial during 1925 and some of the trades that contravened these new regulations had to be closed.

*Bakeries.*—Of the 2 bakeries at Dodanduwa 1 was closed and the other is being improved.

Of the 2 at Hikkaduwa 1 was closed. Of those at Ambalangoda there are 2 which do not comply with the regulations.

There are 7 bakeries at Weligama and 1 at Dondra in the Matara District. All were inspected and steps taken to improve them in terms of regulations introduced in April, 1925. Out of the 7 at Weligama, 3 will be closed as they cannot be rendered fit.

In the Hambantota District nothing can be done in the absence of regulations.

In the rural areas there are 13 bakeries in the Matara District and 34 in the Galle District. Very little improvement could be effected except by persuasion in the absence of regulations.

*Tea Boutiques and Eating-Houses.*—There are 132 such premises distributed as follows:—Matara District 40 tea boutiques, Hambantota District 4 eating-houses and 10 tea boutiques, and Galle District 9 eating-houses and 69 tea boutiques. Attempts have been made in rural areas to introduce the use of some kind of receptacle for the collection and removal of refuse, &c., from the trade premises.

*Dairies and Milk Supply.*—This trade is carried on extensively both in the Sanitary Board towns and in rural areas, but only those within the former are controlled by by-laws. Even in the towns regulations do not control supplies that come from outside Board limits. An amendment to the regulations at Weligama was passed to make them conform to those in force in the Western Province by which licence for milk vendors and dairies supplying milk to the town can be insisted on irrespective of the situation of the dairy. It is desirable that this amendment should be introduced in all the other Board towns.

Several seizures of milk were made at Weligama during the year. Prosecutions were entered against 2 and 1 conviction obtained.

*Meat Stalls.*—In the Galle District there is 1 meat stall at Ambalangoda, and in the Matara District they are attached to the public market, but 2 private stalls are to be found at Weligama.

*Fish Stalls.*—There are no private fish stalls in the Province. Fish is sold in the bazaar areas both in Sanitary Board and rural areas.

*Laundries.*—There are 21 laundries in the towns of Weligama, Dondra, and Tangalla. Gradual improvements are being effected in them.

*Offensive Trades.*—The following offensive trades exist in the Province:—

Coconut husks soaking pits	..	..	..	792
Fibre stores	..	..	..	7
Quarries	..	..	..	4

*Food Unfit for Human Consumption.*—Six cases were instituted for exposing for sale food unfit for human consumption and 4 convictions were obtained. One case was discharged and 1 is pending. Fines realized, Rs. 50.

*Health Education Work.*—A lecture was delivered by the Medical Officer of Health before the Welitara Association in connection with the prize distribution for the best-kept premises in the Welitara division.

*Training Class for Sanitary Inspectors.*—A training class for Sanitary Inspectors was started in July with 42 students and the course of instructions lasted 6 months. At the end of the course 37 students sat for the examination, 5 having dropped out during the training for various reasons. Out of the 37, who sat for the examination, 31 passed, thus qualifying for appointment as Probationary Sanitary Inspectors.

#### SECTION IV.—METEOROLOGY.

29. *Rainfall.*—The rainfall of 1925 was above the annual average over about three quarters of the Island, though variations, whether above or below, were in general smaller than in 1924. Three depressions that occurred in January, March, and November, respectively, were chiefly responsible for this result, as the rainfall during the south-west monsoon was on the whole below its average in the areas where the averages are highest.

The chief areas in which the averages for the year were not reached were (1) on the south-west shoulder of the main hills round Hatton and extending north-eastward to Hewaheta and northward to Ambegamuwa, and thence westward to the northern part of the Kelani Valley to include Kitulgala, &c.; (2) a group of stations due south of Batticaloa; (3) a fairly wide strip of low country extending on both sides of a line from Tabbowa (near Puttalam) through Anuradhapura to Trincomalee. Carney (Adam's Peak) once again heads the list with 251·7 inches or 18·2 inches above its own average, followed by Watawala 213·7, Ingoya 224·0, and Kenilworth 221·6. At the other limit Ponparippu 38·2 was just below Mannar waterworks 39·4, while the lowest average is still held by Marichehukkadi (34·5) with Ponparippu next (37·2).

30. *Temperature.*—Nuwara Eliya and Hakgala were the only stations whose mean temperatures for the year differed from their annual average by more than half a degree. The station showing the highest mean shade temperature for the year was Trincomalee 83·1°F., and the lowest Nuwara Eliya with 59·9°F. The figures for Colombo and Kandy were 80·6°F and 76·3°F respectively.

The highest shade temperature in air recorded during the year was 99·6°F at Batticaloa on August 28. The highest on record is 103·7°F at Trincomalee on May 12, 1890. The lowest this year was 29·6°F at Nuwara Eliya (6,000 feet above sea level) on February 20, at which station 27·1° was recorded in 1914.

The highest shade temperature at Colombo in 1925 was 92·3°F on March 5, and the lowest 63·4° on February 21.

The mean daily range, *i.e.*, the difference between the mean of the maximum and the mean of the minimum was highest at Badulla, 18·2°F and lowest at Galle, 8·0°F. At Colombo and Kandy it was 11·9°F and 15·9°F respectively.

The absolute range for the year, *i.e.*, the difference between the highest and the lowest readings actually recorded at any one station, was greatest at Nuwara Eliya, 46·1°F and lowest at Galle, 19·6°F.

#### SECTION V.—HOSPITALS, ASYLUMS, AND DISPENSARIES.

31. In 1925 there were 84 Government general hospitals, providing about 7,856 beds with varying accommodation from 12 beds in smaller outstations to 800 beds in the General Hospital, Colombo. There were in addition a number of special hospitals, viz., a lying-in-home with 100 beds, an eye hospital with 60 beds, a women's hospital of 34 beds, a children's hospital of 50 beds, a female venereal hospital of 30 beds, a police hospital of 34 beds, a tuberculosis hospital for chronic cases of 338 beds, a tuberculosis sanatorium of 72 beds, an infectious diseases hospital of 100 beds, a lunatic asylum with 1,320 beds, a leper asylum near Colombo with 450 beds, a temporary lunatic asylum with 150 beds at Matara in the Southern Province, and a leper asylum with 150 beds in the island of Mantivu in the Eastern Province.

Seventy-nine estate hospitals and 690 estate dispensaries were maintained by proprietors of estates.

There were 540 Government dispensaries in different parts of the Island in 1925, and 2,360,468 patients who paid 3,653,016 visits were treated at these dispensaries and the out-patient departments of hospitals during the year, as against 2,497,122 and 3,573,694 respectively in 1924. The total number of inpatients who were treated at the various hospitals was 188,354 with a mortality rate of 7·1, as against 176,787 and 6·8 the previous year. The following buildings were completed during the year :— New female ward and additions to nurses' quarters, Matale Hospital ; quarters for second apothecary, Uda Pussellawa Hospital ; improvements to Uda Pussellawa Hospital ; glazing in the verandah of Nuwara Eliya Hospital ; new hospital at Gampola, 2 wards of 24 beds each with new kitchen covered way, baths and earth closets at Lindula Hospital ; matron and nurses' quarters with covered way Dolosbage Hospital ; hospital at Bogawantalawa ; quarters for Eye Surgeon, Galle ; quarters for House Surgeon, Galle ; maternity ward, 10 beds, Galle ; new police ward, 8 beds, Galle ; opium depôt at Kurunegala Hospital ; improvements to Anuradhapura Hospital, viz., portico, dressing room for outdoor patients, new mortuary, labour room, and midwife's room ; District Medical Officer's quarters, Alutnuwara Hospital ; and mortuary and well for Embilipitiya dispensary.

32. The following is a summary of the chief features of the report of the Medical Superintendent, General Hospital, Colombo.

742 patients remained in hospital on December 31, 1924, 52 in the paying section and 690 in the non-paying section.

During the year 18,920 patients were admitted, 17,641 to the non-paying wards and 1,279 to the paying wards. At the out-patient department 34,579 persons were treated representing 81,363, attendances, *i.e.*, a daily average attendance of over 200.

Of the 1,331 under treatment in the paying section, 1,160 were discharged, 121 died, and 50 remained on December 31, 1925.

Of the 18,331 under treatment in the non-paying section, 15,642 were discharged, 1,948 died, and 741 remained on December 31, 1925.

The daily average sick in hospital was 70·53 in the paying section and 782·48 in the non-paying section.

The maximum and minimum numbers of patients in hospital on any one day during the year 1925 in the non-paying and paying sections respectively was as under :—

<i>Paying Section.</i>			
Maximum	..	..	87 on May 12, 1925
Minimum	..	..	49 on April 11, 1925
<i>Non-paying Section.</i>			
Maximum	..	..	840 on October 10, 1925
Minimum	..	..	690 on March 16, 1925

Of the 17,641 admitted in 1925 to the non-paying section, 7,360 were surgical cases and 10,281 were medical cases. The number of surgical operations performed in 1925 was 2,642, exclusive of 151 minor operations performed in the out-patient.

2,263 operations were performed in the non-paying section with 128 deaths giving a percentage mortality of 5·6. In the paying section the number of operations was 379 with 9 deaths, giving a percentage mortality of 2·3. The following table gives the figures for the past three years of the cases under treatment, the percentage mortality, and the daily average number in hospital in the paying and non-paying sections respectively :—

<i>Paying Section.</i>							
Year.	Cases under Treatment.		Deaths.		Percentage Mortality.		Daily average sick.
1923	..	1,050	..	74	..	7·4	55·05
1924	..	1,194	..	82	..	6·8	65·38
1925	..	1,331	..	121	..	9·0	70·53
<i>Non-paying Section.</i>							
1923	..	16,562	..	2,000	..	12·07	764
1924	..	16,744	..	1,746	..	10·42	713·55
1925	..	18,331	..	1,948	..	10·62	782·48

As regards particular diseases the following figures are appended showing their prevalence and mortality during the last three years :—

<i>Anchylostomiasis.</i>			<i>Malaria.</i>		
1923	..	553 cases with 134 deaths	1923	..	2,250 cases with 15 deaths
1924	..	524 cases with 72 deaths	1924	..	2,610 cases with 14 deaths
1925	..	595 cases with 71 deaths	1925	..	1,980 cases with 23 deaths
<i>Appendicitis.</i>			<i>Parangi.</i>		
1923	..	169 cases with — deaths	1923	..	426 cases with — deaths
1924	..	171 cases with 2 deaths	1924	..	430 cases with — deaths
1925	..	165 cases with 5 deaths	1925	..	301 cases with — deaths
<i>Dysentery.</i>			<i>Pneumonia.</i>		
1923	..	194 cases with 88 deaths	1923	..	381 cases with 189 deaths
1924	..	185 cases with 87 deaths	1924	..	539 cases with 256 deaths
1925	..	375 cases with 96 deaths	1925	..	627 cases with 189 deaths
<i>Enteric Fever.</i>			<i>Phthisis.</i>		
1923	..	248 cases with 104 deaths	1923	..	517 cases with 257 deaths
1924	..	260 cases with 102 deaths	1924	..	535 cases with 226 deaths
1925	..	373 cases with 121 deaths	1925	..	530 cases with 297 deaths

There has been an increase in the number of cases admitted under the following heads :— Anchylostomiasis, dysentery, enteric fever, pneumonia. The largest increase being under the heads of dysentery 375, as against 185 last year, enteric fever 373, as against 260, pneumonia 627, as against 537, malaria shows a decrease.

The following figures will give an idea of the increase in the number of admissions which has been steady and progressive :—

1921 number of admissions	..	..	15,443
1925 number of admissions	..	..	17,641
Total number of beds in the non-paying section	..	..	626
Daily average sick in hospital	..	..	782.48

*X-Ray Department.*—Report of the Radiologist, Dr. H. O. Goonewardene for the year :—

The work of this department was taken over by me from my able predecessor, Dr. F. O. B'Ellison on March 1 last year. During the year 1,060 cases have come to us for X-ray examination, X-ray treatment, and electrical treatment. Of these 803 were non-paying patients of the hospital, who came for X-ray examination, 113 were private patients from outside practitioners, 72 were patients from the paying wards seeking X-ray examination, 59 sought electrical treatment mostly as private patients, and 13 came for X-ray screen examination only.

A comparison of these figures with those of last year shows an approximate increase of 37 per cent. in the attendance of patients, a 70 per cent. increase of the revenue to the hospital through the department, a nearly 70 per cent. increase of private cases, and a progressive increase in the number of patients seeking electrical treatment. These indications of progress and advancement are no doubt due to the reorganization and re-equipment of the X-ray and Electrical Department. These good results were obtained with only a few useful and inexpensive additions to the machinery which has been in use in the past, and they cannot be attributed to the larger expensive apparatus which is on order. It seems reasonable to anticipate that sufficient accommodation, good assistants, more powerful apparatus, and the utilization of all the different forms of electrical appliances generally regarded as of value should make this department both up-to-date and most useful. These latter are being supplied and before long we ought to be able to undertake any measure in the sphere of X-rays or medical electricity which makes for either accurate diagnosis or satisfactory treatment, or both.

There can be no doubt that X-ray methods have helped in a good many of the cases which have come to us towards accurate diagnosis. A good many cases of paralysis have been treated in the electrical department and a fair number of cases of joint disease like those of chronic arthritis of obscure causation have shown good results as a result of treatment with Diathermy.

The amount of X-ray fees recovered from private patients and first class paying patients respectively during the year was Rs. 2,010 and Rs. 1,440, as against Rs. 2,086 and Rs. 360 respectively the previous year.

*Expenditure and Receipts.*—The receipts during the last financial year from patients in the paying section amounted to Rs. 164,211.67 and in the non-paying section Rs. 6,878.50. The approximate expenditure during the same period was Rs. 61,126.35 in the paying section and Rs. 135,464.98 in the non-paying section; the expenditure in both sections does not include the salaries of the medical and nursing staff nor the cost of drugs and dressings. The number of cases treated at the Venereal Diseases Clinic during the year was as follows :—480 cases of syphilis, 126 of soft sores, 336 of gonorrhoea, and 61 of yaws, as against 524 cases of syphilis, 48 of soft sores, 463 of gonorrhoea, and 27 of yaws in 1924. Diagnosis of cases of syphilis is mainly made by the clinical characters, but when in doubt Wasserman test is being made use of or smears for the spirochaetes are examined under the microscope. The drugs used in the treatment of syphilis can be classified into 4 groups—(1) arseno benzol compounds, (2) preparation of mercury, (3) bismuth preparations, and (4) potassium iodide. Of the arseno benzol group neosalvarsan (intravenously) is exclusively made use of, and the results are quite satisfactory. Mercury is used mainly in two forms, viz., as intramuscular injections of gray oil or as Hydrarg C. Cret. in pill form. To the armamentarium of drugs is lately added a bismuth preparation called "Bismostab" prepared by Messrs. Boots. Although it cannot replace the time-honoured treatment of syphilis by mercury, it is useful in the treatment of syphilis of the central nervous system, so that bismostab is used in addition to injections of gray oil but not in lieu of it. It is worthy of note that syphilis in this country does not seem to affect the central nervous system as frequently as it does in European countries, so that it is rare to see specific disease of the brain and spinal cord in Ceylon, and diseases like general paralysis of the insane and Tabes dorsalis are seldom met with.

The attendance in this clinic is satisfactory, but it is a matter for regret that only 35 per cent. of the cases of syphilis attend regularly so as to complete a full course of treatment, the remaining 65 per cent. cease to attend after 4 or 6 months of treatment, and as soon as their urgent symptoms have disappeared. This is in spite of verbal instructions and advice set out in the printed leaflets (which are distributed freely) that they should attend the clinic for two years.

33. *The Lunatic Asylum.*—There were 805 males and 483 females in the asylum at the beginning of the year, 315 males and 165 females were admitted during the year, and the total number treated in 1925 was 1,120 males and 648 females, as against 721 males and 483 females treated in 1924 and 944 males and 612 females in 1923. 228 males and 98 females were discharged and 71 males and 80 females died during the year.

The daily average number resident of asylum cases was 827·67 males and 493·65 females, as compared with 757·37 males and 479·60 females in 1924 and 668·1 males and 475·03 females in 1923.

In the House of Observation 27 males and 7 females remained at the end of the previous year, 281 males and 139 females were admitted, and a total number of 281 males and 139 females had to be dealt with during the year, as against 262 males and 108 females in 1924. Of the cases dealt with 172 males and 87 females were transferred to the asylum. 85 males and 34 females were discharged and 12 males and 2 females died. The deaths in 1924 were 5 males and 3 females. The numbers remaining on December 31, 1925, were 39 males and 23 females. The daily average for both institutions together was 854·96 males and 507·55 females, as against 781·93 males and 489·84 females, respectively, the previous year.

The largest number resident on any one day during the year was 1,358 and the lowest 1,274, as compared with 1,291 and 1,198 in 1924.

An average of 72 males were employed in gardening, 41 in trade, and 199 in household work. Of the women 68 were employed in gardening and outdoor work, 37 in sewing, rope making, and mat making, and 192 in household work.

34. *The De Soysa Lying-in Home.*—The number of cases under treatment was 3,604 as against 3,045 the previous year, 2,934 in 1923, 3,002 in 1922, and 3,506 in 1921. The death rates for these years were 3·24, 3·18, 2·4, 2·5 and 2·29, respectively. Of the 117 deaths during the year, 36 were due to accidents of child birth, 8 to puerperal causes, and 73 to intercurrent diseases such as aneurylosomiasis, pneumonia, dysentery, heart failure, peritonitis, &c. The number of births was 2,677. Of these 2,272 infants left the hospital alive, 283 were stillborn, and 122 died after delivery, as against 2,315, 1,973, 238, and 104, respectively, in 1924. 76 pairs of twins and 1 set of triplets were born in 1925, 49 pairs of twins and 3 sets of triplets in 1924. 313 operations were performed during the year, including the use of forceps in 131 cases, craniotomy in 28 cases, embryotomy in 1 case, decapitation in 1 case, bi-polar podalic version in 23 cases, internal podalic version in 46 cases, external cephalic version in 1 case, curettage in 7 cases, cleidotomy in 2 cases, evacuation of uterus in 58 cases, manual extraction in 2 cases and 13 other operations. Labour was classified as normal in 2,364 cases. There were 313 cases with other presentations. In 44 cases of placenta praevia, 13 infants were born alive, 11 were born dead. Thirty-three mothers recovered, 11 died. Of the 78 cases of puerperal eclampsia, 65 recovered and were discharged.

35. *The Victoria Memorial Eye Hospital and the Grenier Ear, Nose, and Throat Infirmary.*—22,801 patients paid 63,451 visits to the Out-Patient Department during the year, as against 21,679 and 56,360 in 1924 and 19,253 and 53,067 respectively in 1923. Of the out-patients treated 18,594 were eye cases, 620 throat, 3,231 ear, and 356 nose cases.

The number of new admissions as in-patients was 1,462, as against 1,401 in 1924 and 1,313 in 1923, and the daily average of sick in hospital was 96·56 in 1925, 90·46 in 1924, and 75·24 in 1923. The total number of operations performed on in-patients during the year was 589, on out-patients 1,854, the corresponding figures for the previous year being 522 and 1,465 respectively.

36. *The Lady Havelock Hospital for Women and the Lady Ridgeway Hospital for Children.*—The total number of admissions in 1924 was 2,272, and with those remaining from the previous year, the total treated during the year was 2,356, as against 2,280 and 2,355, respectively, in 1924. The number of paying patients admitted during the year was 92, and of these 13 were maternity cases. The percentage of deaths to total treated was 18·2, as against 18·4 the previous year; a great number of these deaths were amongst babies brought to hospital in a moribund condition. Seventy cases of enteric fever, 163 cases of advanced aneurylosomiasis, 60 babies suffering from congenital syphilis, 13 cases of parangi, 30 cases of phthisis, 2 cases of diphtheria, 47 cases of dysentery, and 66 cases of puerperal septicaemia were admitted during the year. All patients were treated for aneurylosomiasis in the non-paying section with oil of chenopodium and carbon tetrachloride as a routine. Nine cases died of puerperal septicaemia. The majority of these cases had been attended to by midwives, whose midwifery is very bad and not according to modern methods. The number of surgical operations performed was 676. Of these 519 were major and 157 minor, the former included 72 abdominal sections. The operation mortality rate was 3·6 per cent., as against 4·3 per cent. the previous year.

Twenty-four pupils were admitted to the training school during the year. Of these 2 resigned.

Two examinations were held during the year, 8 nurses passed and 1 failed. The total nursing staff consists of 1 European matron, 2 European sisters, 9 Ceylonese charge nurses, and 33 pupils.

37. *The Police Hospital, Borella.*—The number of patients treated during the year was 1,409, as against 1,048 in 1924; 7,067 patients were treated at the Out-patient Department of this hospital and at the nine branch Police Dispensaries in the town, as against 4,842 in 1924. Of the hospital cases 306 suffered from malaria, chiefly relapses in police who had been transferred to Colombo from various malarious stations, 302 from influenza, 28 from dysentery, and 111 from venereal diseases. There was only 1 death in 1925 from diabetes, and the percentage of deaths to total treated was ·07, as against 1 death and a mortality rate of ·09 per cent. the previous year. A Police Surgeon and an Assistant Police Surgeon are attached to the Police Force in Colombo and its suburbs, and they have the medical care of about 1,500 police of all ranks and their families.

38. *The Infectious Diseases Hospital, Colombo.*—Three permanent wards and several large temporary eadjan sheds in extensive grounds are available at this institution for cases of infectious diseases from Colombo and its neighbouring villages and from infected ships arriving at the port.

A new hospital is being built on modern lines at Angoda, 6 miles away from Colombo, and it is hoped to occupy the new building early next year.

The total number of cases treated during the year was 1,457 with 46 deaths and a mortality rate of 3·15 per cent., as against 959 cases treated with 110 deaths and a mortality rate of 11·47 per cent. in 1924 and 1,297 cases treated, 98 deaths, and a death rate of 7·55 per cent. in 1923.

The number of cases of smallpox admitted during the year was 24—all the 24 cases were imported ones, and there was not a single local case. Of these 1 case proved fatal, which being of confluent type. Of the other 23 cases, 2 were confluent, 5 were discrete, and 16 were modified. All the cases had visible marks of vaccination excepting 3.

1,090 cases were vaccinated at the hospital during the year, and 476 of these were successful and 614 were unsuccessful.

Twenty-six cases of plague were admitted and treated during the year with 21 deaths, as against 78 cases with 63 deaths the previous year. Of the cases admitted 25 were males and 1 female, 23 were bubonic, 1 septicaemic, and 2 pastular. Of the 23 bubonic cases, 19 died, 12 had groin buboes, and 11 axillary buboes. Of the recovered cases 4 had groin buboes, and 1 case which was pastular had no external buboes.

The Neo-Kharsivan treatment was tried on 6 cases and, as the results were not satisfactory, it was given up, though it was reported to have been efficacious in Uganda. Two cases of pastular form of plague were treated during the year, 1 developed buboes and the other had no external buboes. The case which developed buboes expired and the other recovered. Both cases were bacteriologically proved as genuine cases of plague. Three cases of cholera in a collapsed and advanced stage were admitted during the year. All of them being new arrivals from South India, the cases did not respond to treatment and expired. Of the other infectious diseases admitted during the year, 60 were cases of enteric, 7 diphtheria, 1,082 chickenpox, 190 measles, 29 mumps, 3 influenza, and 14 whooping cough.

39. *The Convict Hospitals.*—In 1925 there were 10 hospitals for prisoners: at Borella (Colombo) 215 beds, Welikada (Colombo) 8 beds, Mahara 59 beds, Negombo 17 beds, Bogambara (Kandy) 32 beds, Jaffna 12 beds, Galle 12 beds, Batticaloa 5 beds, Anuradhapura 52 beds, and Badulla 7 beds.

A total number of 7,082 sick prisoners were treated at these hospitals during the year with 74 deaths and a mortality rate of 1·04 per cent., as against 7,308, 82, and 1·12 per cent., respectively, in 1924. Prisoners paid 44,119 visits to the jail dispensaries to be treated for minor ailments, as against 43,220 the previous year.

Twelve prisons were maintained during the year—at Welikada, Bogambara, Mahara, Anuradhapura, Badulla, Batticaloa, Galle, Jaffna, Negombo, Hulftsdorp, Kandy and Main Prison Hospital, Borella, Colombo, and the number of prisoners in these prisons on December 31, 1924, was 3,220 (3,146 males and 74 females).

14,827 male prisoners and 463 female prisoners were admitted, 14,937 males and 467 females were discharged, and 69 males and 2 females died during the year, as against 14,215, 485, 14,078, 483, 93, and 1, respectively, in 1924. The death rate for 1925 was ·4 per cent., as against ·5 per cent. for 1924. The general health of the prisoners was satisfactory during the year.

At the Borella Convict Hospital 3,594 cases were treated with 39 deaths, and a mortality rate of 1·08 per cent., as against 2,820 cases, 68 deaths, and a death rate of 2·41 per cent. in 1924. The daily average sick for the year was 93·54, as against 85·25 the previous year. Of the cases treated during the year, 722 were cases of influenza, 26 of tuberculosis, 554 of dysentery, 672 of conjunctivitis, and 141 of malaria. At the Mahara Jail Hospital 1,527 cases were treated during the year with 13 deaths and a percentage of deaths to total treated of ·85, as against 2,740, 6, and ·21 per cent. in 1924. The daily strength of the jail was 675·49, daily average 34·53, the percentage of deaths to strength of jail ·85, as against 740·10, 75·06 and 1·23 the previous year.

The percentage of sick to strength of jail was 5·03 in 1925 and 9·86 in 1924. Primary attacks of malaria were fewer than in previous years. All possible preventive measures were continued with better results. The prophylactic treatment of new arrivals and infected individuals with quinine was found to be very successful. The number of cases of malaria treated in hospital during the year was 377 with no deaths, as against 712 cases with 1 death in 1924 and 2,033 cases with 2 deaths in 1923. Of the 377 cases of malaria admitted to the hospital, 161 were primary infections and 216 were relapsing cases. The corresponding figures for the previous year were 712, 156 and 556 respectively.

40. *Medical Institutions aided by Government.*—The following institutions were aided by Government during the year:—

(1) The Victoria Home for Incurables; (2) Wiseman Hospital, Welimada; (3) McLeod Hospital, Inuvil; (4) Jevon's Dispensary, Puttur; (5) Jevon's Dispensary, Batticaloa; (6) The Wesleyan Medical Mission Hospital at Kattankudy; and (7) The Denipitiya Medical Mission Hospital in Southern Province; Nos. (1) and (7) for males and females; Nos. (2) to (6) for women and children only.

*Victoria Home for Incurables.*—Eighty-nine patients remained on December 31, 1924, and 32 were admitted during the year. Of these 26 died, 12 were discharged, and 83 remained at the end of the year, as against 34, 21, 13, and 89, respectively, reported the previous year.

*Wiseman Hospital, Welimada.*—278 patients were treated in hospital during the year, including 46 maternity cases; of these 13 died, 259 were discharged, and 6 remained at the end of the year. The number of cases treated at the dispensary was 2,409, as against 2,946 in 1924. The diseases treated were mostly dysentery, enteric, burns and scalds, pneumonia, vermes, and nephritis.

*McLeod Hospital, Inuvil.*—The total number of in-patients treated during the year was 2,474 with 104 deaths and a mortality rate of 4·2 per cent., as against 2,289, 126, and 5·05 per cent., respectively, in 1924 and 1921, 74 and 3·85 per cent., respectively, in 1923.

The number of maternity cases treated in 1925 was 775—672 in hospital and 103 in the villages, and in 1924, 658, 583, and 75, respectively. Of the 775 maternity cases 414 were normal and 84 premature labours, and 11 pairs of twins were born during the year. There were fewer premature cases and also a lower mortality during the year probably due to many patients having come to hospital for Ante-natal treatment. There were 41 cases of puerperal eclampsia, of which 36 recovered, 4 died, and 1 not improved.

Pupil midwives are being trained here for service in the villages. Nine pupil midwives presented themselves at the examination held in the De Soysa Lying-in-Home, Colombo, in March, 1925, and of these, 7 passed successfully and obtained certificates in midwifery. In September, 1925, a second batch of 8 pupil midwives took up the examination and 7 passed and received their certificates.

4,331 out-patients paid 7,074 visits in 1925, as against 4,031 and 7,212, respectively, the previous year.

*The Jevon's Dispensary, Puttur, Northern Province.*—Much educational work in regard to maternal and infant welfare and home nursing and prophylactic work were done during the year in Puttur and the surrounding villages by the Sisters of the Wesley Deaconess Order. 1,433 visits were paid by patients to the dispensary, as against 1,362 in 1924.

*The Jevon's Dispensary, Batticaloa.*—1,833 visits were paid by out-patients in 1925, as against 2,037 in 1924. Twenty-four patients were treated in the ward attached to the dispensary with 1 death. Most of the cases were in maternity ones.

*The Wesleyan Mission Dispensary at Kattankudy* is visited by the Medical Missionary Lady-in-Charge of the Jevon's Dispensary, Batticaloa, and large numbers of Muslim women and children attend for advice and treatment. Her services are also available in cases of accouchement in this thickly-populated Muslim village.

*The Denepitiya Medical Mission Hospital* was established in 1924 by the members of the Anglo-Catholic Union and was in charge of a qualified Medical Officer, until August, 1925, when Dr. G. S. W. de Saram resigned through ill-health.

22,332 cases were treated during the year. Of these 2,012 cases were of parangi, 1,272 of anchylostomiasis, and 770 of malaria.

#### SECTION VI.—MISCELLANEOUS.

41. Report on the working of the King Edward VII. (Memorial) Anti-Tuberculosis Fund during the year 1925 :—

The Sub-Committee of the King Edward VII. (Memorial) Anti-Tuberculosis Fund paid a visit to the Kandana Sanatorium and Ragama Hospital in March, 1925. As a result of this visit, the Director of Medical and Sanitary Services recommended to Government that all the old wards at the Ragama Hospital should be rebuilt as early as possible, and that the nursing work at the hospital should be taken over by the religious sisters as in the case of the non-paying wards at the General Hospital, Colombo. The complete rebuilding scheme for Ragama Hospital recommended by the Director of Medical and Sanitary Services would provide for 500 new beds. The estimated cost of the scheme is 5 to 6 lakhs of rupees. The Sub-Committee strongly recommended to Government that as large a sum as possible should be allocated, if possible, from surplus balances, in order that the work of reconstructing the old wards at the hospital might be undertaken at the earliest possible date. The Sub-Committee also recommended that an additional junior Medical Officer should be appointed to the Ragama Hospital. Government has informed the Sub-Committee that a sum of Rs. 125,000 has been provided in the budget for 1925-26 for new wards and quarters for religious sisters at the Tuberculosis Hospital, Ragama, and that a junior Medical Officer has been appointed to the hospital with effect from June 5, 1925.

#### PROPAGANDA WORK.

The series of seven health letters dealing with the incidence, spread, and prevention of tuberculosis which was published in the English and vernacular newspapers in Colombo and Jaffna in the previous year was repeated in 1925, and the assistance given by the press to educate in this manner the public in the value of fresh air, cleanliness, hygienic living, &c., is much appreciated by the Sub-Committee.

The Medical Officer of the King Edward VII. (Memorial) Anti-Tuberculosis Institute, Colombo, was supplied last year with 5,000 posters in English and 3,000 posters each in Sinhalese and Tamil, dealing with the prevention and cure of tuberculosis for distribution throughout the Island.

#### ADDITIONS AND IMPROVEMENTS.

The following additions and improvements to Kandana Sanatorium and Ragama Hospital were carried out during the last year from the funds at the disposal of the Sub-Committee.

*Kandana Sanatorium.*—The combined scheme for the supply of water and electric light to the Kandana Sanatorium which was sanctioned by the Sub-Committee in September, 1924, has now been completed at a cost of Rs. 25,035.

*Ragama Hospital.*—(a) Dhobies lines of 3 rooms, a 60-gallon farmer's boiler in the steaming room, and a drying stove in the drying room have been provided at a cost of Rs. 3,986·12; (b) a separate latrine has been provided for the guards looking after prisoners under treatment at a cost of Rs. 95. It has also been decided to provide electric light at Ragama Hospital, and the Director of Public Works has been asked to furnish an estimate for this work.

#### NEW SANATORIUM IN THE NORTHERN PROVINCE.

A new site about 1 mile from Kankesanturai Railway Station near the 12 $\frac{3}{4}$  mile stone has been definitely selected for the new sanatorium, and the acquisition proceedings are in hand.

#### FINANCE.

An audited statement of receipts and payments showing the working of the fund during the year 1925, is annexed.

#### MEMBERSHIP,

Early in 1925, Dr. G. J. Rutherford, late Principal Civil Medical Officer, resigned his membership from the Sub-Committee owing to his retirement from the Public Service. The Sub-Committee have placed on record their appreciation of the very valuable services rendered by Dr. Rutherford to the Anti-Tuberculosis Campaign in Ceylon and to the Sub-Committee since 1915, when he became the Principal Civil Medical Officer.

KING EDWARD VII. ANTI-TUBERCULOSIS FUND.

Summary Statement of Receipts and Payments for the year ending December 31, 1925.

RECEIPTS.	Rs.	c.	PAYMENTS.	Rs.	c.
To balance on December 31, 1924 ..	129,925	67	By Director of Public Works being amount deposited to meet current expenditure on various works ..	20,000	0
Refund of unexpended balance on works per Director of Public Works ..	4	13	Two tennis nets and ratchet ..	65	0
Interest on current bank account ..	258	45	Honorarium to Mr. H. K. Hillyer ..	1,500	0
Interest on fixed deposit—			Fees for audit and other clerical work	118	56
	Rs.	c.	Fees for drawing a deed ..	38	50
Imperial Bank ..	3,122	60	Sundries (advertising, travelling, &c.)	493	50
Eastern Bank ..	825	0	Balance on December 31, 1925—		
		3,947	Rs.	c.	
			Current account ..	20,770	19
			Fixed deposit ..	91,150	10
					111,920 29
		134,135			134,135 85
		85			85

Audited and found correct :  
F. G. MORLEY,  
Colonial Auditor.

H. N. COLLYER,  
Honorary Treasurer.

42. Report of the Registrar on the working of the Ceylon Medical College for the year 1925 :—

ADMINISTRATIVE CHANGES.

Of these the most important is the reconstruction of the Medical College Council under Ordinance No. 25 of 1924. Under this Ordinance the members representing the medical profession at large in Ceylon, and the British Medical Association, disappear, and the Council will henceforth consist only of nominated representatives of the teaching staff, and certain officials *ex officio* as follows :—

The Director of Medical and Sanitary Services ; the Deputy Director of Medical and Sanitary Services ; the Senior Military Medical Officer, Colombo ; the Registrar of the Medical College ; one Lecturer in Pre-Medical subjects ; one Lecturer in First Professional subjects ; one Lecturer in Second Professional subjects ; one Lecturer in Final subjects.

The first meeting of the new council was held on September 18, 1925. The following are the members :—The Hon. Dr. J. F. E. Bridger, D.M.S.S.; Dr. G. Thornton, Deputy D.M.S.S.; Lieut.-Col. N. Dunbar Walker, O.B.E., R.A.M.C., S.M.M.O., Colombo, and Government Assessor ; Dr. F. O'B. Ellison, Registrar, Ceylon Medical College ; Dr. Lucian de Zilwa, Final Lecturer ; Dr. Joseph de Silva, Second Professional Lecturer ; Dr. Gunaratnam Cooke, First Professional Lecturer ; Professor W. N. Rae, M.A., F.I.C., Pre-Medical Lecturer.

The following changes were made in the teaching staff during the year :—

Dr. F. O'B. Ellison resigned the acting lecturership in medical electricity. Dr. H. O. Gunewardene, Radiologist, to the General Hospital was appointed permanently to this post.

Dr. S. T. Gunasekera was appointed Lecturer in Hygiene, in place of Dr. Bridger, promoted to be Director of Medical and Sanitary Services.

During the month of January, 1925, Dr. S. Somasunderam was absent on account of illness. Dr. E. M. Wijerama acted as Demonstrator of Anatomy and Physiology and Lecturer in Practical Pathology and Elementary Anatomy and Physiology in his place.

During the absence of Dr. V. Gabriel on leave Dr. E. C. Alles acted as Lecturer in Operative Surgery during the short session, and Dr. G. Cooke acted as Clinical Lecturer in the Out-patient Surgical Department. During the absence of Dr. E. C. Spaar on leave Dr. W. L. de Silva acted as Lecturer on Diseases of Children and on Elementary Medicine.

Provision was made in the budget for the appointment of an Assistant to the Professor of Physiology, an extra Grade II. Medical Officer to be provided in the Civil Medical Department, and the selected officer to be posted for whole-time duty in the Medical College, to receive his grade salary plus an allowance with increments annually, and permission to take pupils for coaching in Physiology if he so desire. Dr. S. S. Selladurai was recommended for the post by the Professor of Physiology, but the formal appointment with the approval of the Council had not been made at the close of the academic year.

Provision was also made for the appointment of a whole-time night watcher for the College from the beginning of the next year.

The extra equipment for the Physiology Department provided for last year has now been received, and the standard of teaching both theoretical and practical has been much improved in consequence.

In particular the illustration of lectures is much better, and the practical work more in conformity to modern requirements, while the students' practical work shows great improvement owing to the apparatus employed being now in a proper state of repair. The absence of a College workshop is however much felt, as all small repairs and adjustments have to be made by the Professor in his own private workshop.

The revenue of the College amounted to Rs. 37,992 showing an increase of Rs. 7,968 owing to the increased scale of fees now in force.

Expenditure amounted to Rs. 82,809 showing an increase of Rs. 26,305 chiefly accounted for by the normal annual increments of salaries falling due.

Attention is again drawn to the urgent need for a new physiological laboratory, lecture room and new offices. It is hoped that provision will be made in the estimates for 1926-27 for this necessary block of buildings.

There is a fall in the number of entries to the Medical College since the introduction in 1924 by the General Medical Council of Great Britain of the rule whereby students must pass a Pre-medical Examination before they can be registered as Medical Students. This Pre-Medical Examination includes Chemistry, Physics, and Biology which used to form the First Medical Professional Examination. The effect of this has been to lengthen the course of study by one year. Before this system was introduced the average number of medical students joining the College was 39. Since its introduction the average number has only been 10.

During the year 28 students obtained the L.M.S., Ceylon, qualifying them to practise medicine, surgery, and midwifery ; and 13 new students joined the College as Medical Students ; at the end of the year the various classes were distributed as follows :—

First Year	..	..	..	..	13
Second Year	..	..	..	..	2
Third Year	..	..	..	..	39
Fourth Year	..	..	..	..	25
Fifth Year	..	..	..	..	72
					151

The results of the various professional examinations were as follows :—

		December.				March.				July.				Total-			
		Sat.		Passed.		Sat.		Passed.		Sat.		Passed.		Sat.		Passed.	
Final	..	..	23	..	9	..	26	..	7	..	35	..	12	..	84	..	28
Third Professional	..	..	—	..	—	..	35	..	17	..	31	..	19	..	66	..	36
Second Professional	..	..	—	..	—	..	16	..	8	..	30	..	11	..	46	..	19
First Professional	..	..	—	..	—	..	5	..	2	..	3	..	1 (June)			..	3

The following Scholarship, Medals, and Prizes were awarded :—

October, 1924	..	A. Rustomjee Jamsetjee Jeejeebboy Scholarship, E. T. Samuel.
December, 1924	..	Dadabhoy Gold Medal for Medicine, A. S. Gunawardene.
March, 1925	..	Perry Exhibition, M. V. P. Peries.
June, 1925	..	Entrance Scholarship
	..	Pre-Medical Medal
	..	Lucy de Abrew Medal
	..	R. D. de A. Seneviratne.
July, 1925	..	Second Professional Scholarship, S. Aryaratnam.
	..	Second Professional Medal, A. C. E. Koch.
	..	Chalmers Gold Medal for Anatomy, S. Aryaratnam.
	..	De Heer Gold Medal for Physiology, H. V. R. de Silva.
	..	Mathew Gold Medal for Medical Jurisprudence, W. Wickremasinghe.
	..	The Vanderstraaten Medal for Hygiene, R. G. Perera.
	..	The Rockwood Gold Medal for Surgery
	..	The Garvin Gold Medal for Operative Surgery
	..	The Dadabhoy Gold Medal for Medicine
	..	The Diploma Medal
	..	The Rutherford Gold Medal for Tropical Medicine
July, 1925	..	First Apothecaries, Medal, B. A. Vanderkoon.
July, 1925	..	Vanderstraaten Certificate for Hygiene, A. D. S. Cyril.
March, 1925	..	Perry Exhibition, P. S. K. Peter.

The Rutherford Gold Medal for Tropical Medicine is awarded by the Council in honour of Dr. G. J. Rutherford who for ten years was Principal Civil Medical Officer, and Principal of the College.

A die has been made by Messrs P. Orr & Sons of Madras from a fine photograph of Dr. Rutherford by Messrs. Platé, the cost of the die and an annual gold medal being met from the College Medal Funds.

Four Medical Students were discontinued from the College during the year on account of very unsatisfactory progress with their studies. Of these two had failed to pass the First Professional and two the Second Professional within the time allowed by the Council.

In the Apothecary section 13 new students joined the College and 14 passed out as qualified Apothecaries. At the two examinations, 18 candidates sat for the First Apothecary Examination and 12 passed, while 23 sat for the Final Apothecary Examination and 14 passed.

One Apothecary Student was discontinued as he had failed to pass the Apothecary Final in the scheduled time.

43. *The Civil Medical Stores.*—During the year the additional storerooms were completed and occupied, and this has provided a great deal more accommodation for storing drugs and dressings, as well as increased accommodation for the stationery and forms branch which was very much needed.

Imported drugs and dressings arrived in good time and in sufficient quantities excepting certain items on which there was a sudden unexpected run.

The demands made on the stores from the various hospitals and dispensaries have been steadily increasing each half year necessitating the ordering of larger stocks.

Twenty-three new institutions in the Civil Branch and twenty-five in the Estate Branch were opened during the year.

Drugs and instruments were purchased at a cost of Rs. 812,831, of which a sum of Rs. 165,533 was spent on quinine and quinine tablets—quinine 7,215½ lb. and tablets 1,320,500 were issued during the year costing Rs. 257,956; 16,669 bulbs stabilarisan and 18,430 bulbs Neo-salvarsan for treatment of parangi costing Rs. 108,103, and for hookworm treatment drugs to value of Rs. 9,595 were issued during the year. Free drugs and instruments were supplied to Government Departments other than the Medical and Sanitary Department to value of Rs. 20,373.

Opium and preparations were purchased during the year to value of Rs. 183,840, and the amount recovered by sales of opium preparations amounted to Rs. 5,044.

*Cannabis Indica.*—None was purchased during the year. The sales of this drug amounted to Rs. 53·85.

The staff was increased in October by the addition of one clerk and two packers for the Stationery Branch.

44. *Opium.*—The number of opium depôts in the Island remained the same as during the previous year namely, 53.

Two new consumers, as against 49 in 1924, were added to the register on purely medical grounds under section 11, sub-section (4), of Ordinance No. 5 of 1910. The total number of registered consumers served from the opium depôts in the Island during the year was 7,792, as against 8,323 in 1924, 8,647 in 1923, and 9,908 in 1922. 622 consumers obtained smoking opium in 1925, 643 in 1914. The number of vedaralas who purchased opium during the year was 2,756, as against 2,673 in 1924, and 2 710 in 1923.

3,970 lb. of eating opium and 431¾ lb. of smoking opium were sold to consumers and vedaralas during the year, as compared with 4,053 lb. and 474¾ lb., respectively, in 1924. This decrease in the sales during the year was due to deaths among consumers.

There was no change in the selling price of opium. Eating opium was sold at 1½ cents per grain and smoking opium at 2 cents per grain.

The following is a statement of opium sold and amounts realized during the year 1925 :—

During the Quarter ended.	Eating Opium.			Smoking Opium.				
	Quantity sold. Grains.	Amount realized.		Quantity sold. Grains.	Amount realized.		Amount realized.	
		Rs.	c.		Rs.	c.	Rs.	c.
March 31, 1925 ..	6,836,613	..	102,657 38	..	779,300	..	15,586 0	.. 118,243 38
June 30, 1925 ..	6,607,976	..	99,207 85	..	756,050	..	15,121 0	.. 114,328 85
September 30, 1925 ..	6,633,944	..	99,610 90	..	748,450	..	14,969 0	.. 114,579 90
December 31, 1925 ..	6,456,219	..	96,748 19	..	738,325	..	14,766 50	.. 111,514 69
Total for 1925 ..	26,534,752		398,224 32		3,022,125		60,442 50	458,666 82
Total for 1924 ..	28,372,688		426,041 66		3,324,025		66,480 50	492,522 16

During the year 1,800 balls of opium were imported from India, and they were converted into eating and smoking opium.

Seventy-four pounds and 599 grains of hard opium were received at the Government Opium Store during the year from the Principal Collector of Customs and from the Police Magistrates in different parts of the Island. This quantity represents opium smuggled into the Island and seized by the Customs and the Police.

The amount realized by the sale of opium preparations during the year was Rs. 5,231·64, as against Rs. 4,478·06 in 1924.

45. *Medical Work in connection with Railway Extensions.*—The general health of the labourers employed was satisfactory during the year. The following were the hospitals and dispensaries on the extensions :—Kantalai Railway Extension Hospital with Out-patient Dispensary, Galoya Dispensary, Topawewa Temporary Hospital with Out-patient Dispensary, and Oddamavady Dispensary with its branch dispensary at Punanni. The following is a statement of incidence of important diseases during 1924 and 1925 at the Topawewa Hospital.

	1924. Cases.	1925. Cases.	Decrease in 1925.
Malaria ..	2,188	1,629	559
Dysentery ..	311	155	156
Pneumonia ..	42	20	22

The following is a statement of incidence of important diseases during 1924 and 1925 at the Kantalai Hospital :—

	1924. Cases.	1925. Cases.	Decrease in 1925.
Malaria ..	1,772	1,568	204
Dysentery ..	283	92	191
Pneumonia ..	97	51	46

The above two comparative statements show that there is a marked decrease of the number of cases of incidence in the year 1925 when compared with those of the year 1924. This improvement in general health is very probably due to better sanitary conditions in respect of preventive measures taken against malaria, better housing accommodation with provision of sufficient number of latrines and also greatly due to prophylactic use of quinine which has become popularized among the coolies

46. *Medical Inspection of Schools, Western Division :—*

The chief feature of the year under review has been the inauguration of a separate unit of the School Medical Service in Jaffna, for work among the schools attached to the northern grant-in-aid inspectorate, Dr. H. U. Leembruggen with Nurse A. Kirkton assumed duties there in August, but the work has had to be interrupted owing to the temporary absence of the former on other duties.

The routine inspection of the schools in the Western, Central, and Southern Divisions has been carried out by Mrs. (Dr.) Aldons and myself. As in previous years all the children in English schools examined for the first time were individually examined ; in the others only new entrants, and those referred for treatment were re-examined and any other who were sent up for special examination by the teachers. In all 67 boys' and 90 girls' schools with a total number of 11,227 children were examined. In addition, 88 vernacular schools were visited in different parts of the circuit, and their sanitary condition and their methods of instruction in hygiene inspected. In some of the larger schools a Medical Register is kept in which is recorded all the names of the children found "ailing" at these inspections, and this has enabled the school authorities to carry out the important work of following up these cases up to the point of securing treatment ; in a few schools a special member of the staff is entrusted with the duty of watching these cases and interviewing their parents with valuable results. In other schools, however, the co-operation of the school authorities is not what it might be ; there is a fear that State Medical Inspection of school children may result in undermining parental responsibility, or that the ailments which this institution attempts to ameliorate are not the concern of the school teachers. Both attitudes are obviously untenable ; just as there are substantial grants for the erection of school buildings, for the provision of latrines for physical training all intended to secure the physical efficiency of the school child, medical inspection should be regarded as the final effort by the State to secure the best results from the expenditure incurred in providing other educational facilities, and as such it claims the support of the school authorities. It is necessary to labour this point as in the present stage of the evolution of the School Medical Service the co-operation of teachers is indispensable for its success.

At the same time it must be recognized that the final issues in the campaign depend entirely on the response made by the parents. For instance, the Principal of the Richmond College, Galle, assures me that in spite of repeated notices sent to parents regarding the ailments of their children, no action is taken by some of them ; the only course open to him in such cases would be to refuse these children admission to school until proper treatment is afforded. I was, however, unable to approve of such drastic action. The ignorance of the gravity of the disabilities of school children, the poverty and conservatism of parents,

and the absence of proper facilities for treatment, all these circumstances operate against adequate treatment being afforded; the exclusion of the child from school would but remove him from the solitary influence that was capable of rendering him some aid. On the other hand, in certain other Colleges like the Royal and Trinity, the response made by the parents is immediate and a large percentage of cases are treated.

The facilities for treatment in Colombo, Kandy, and Galle are steadily being utilized. The school clinics in Colombo at the Eye Hospital and at the Anti-Tuberculosis Institute are held 4 days in the week, and the attendance for the year amounted to 968 visits. Many of these children have been brought to these clinics by the exertions of the school nurse, whose visits at their homes have succeeded in inducing them to come for treatment where other measures failed.

The sanitary condition of the vernacular schools is a matter to which I have, in previous reports, drawn your attention. During the year I have visited a number of these schools in various parts of the Island, and am convinced that considerable improvement is urgently needed in a great many of them. Badly thatched roofs, unpaved floors, primitive school furniture, inadequate latrine arrangements, bad water supply—these are a few of the defects which exist in many of the assisted schools and even in some of the Government schools.

When it is recognized how profound an influence the sanitary environment of the school has both on the health of the child and his education, the importance of such details cannot be over estimated, more especially is this the case where the school remains practically the only centre for the diffusion of correct hygienic knowledge; the lamentable conditions under which many children spend their school hours are object lessons in neglect of hygiene, and it is inevitable that on the completion of their elementary education these lessons have been so thoroughly ingrained that they are reflected in their homes in after life. Here exists the very root of the difficulty that confronts all measures of general sanitary reform. This “Sanitary sense” moreover is not easily cultivated by class room instruction, no matter how efficient. The gravity of the problem in the vernacular schools there is not so much the condition of the child although malaria, hookworm, and malnutrition still constitute serious devitalizing factors, but rather the school in which the child is being taught. The code lays down that all the schools should be in an efficient sanitary condition, but I feel that the requirements should be more precisely laid down in regard to the points that I have suggested. During the year an increasing number of Government schools have been provided with portable latrines.

The Hookworm Campaign is progressing satisfactorily in the schools. A few years ago considerable difficulty was encountered in the treatment of these children; notice of a visit was a warning for many of them to keep away from school, and the drug was administered with difficulty. The conditions have greatly improved and it is no uncommon experience to find that nearly all the infected cases in any school have been successfully treated. Unfortunately on account of the primitive sanitary conditions obtaining in these villages reinfection is rather the rule, and the Directors of the campaign have consequently arranged for a regular rota of visits within a certain prescribed circuit. This plan is intended to minimize the intensity of infection, where complete freedom cannot be permanently ensured. I am able to testify that the treatment is accepted with gratitude and that the relief afforded is greatly appreciated.

About the middle of last year the Municipality of Colombo inaugurated a system of feeding the poor children attending the schools at Maligakanda, Dematagoda, and Green street. The vote under this head has now been handed over to Mr. H. L. de Mel, M.M.C., who, with the assistance of a Committee controls the working of the scheme. Each of these schools is provided with a kitchen and a complete meal of rice, vegetable and meat curry, is prepared with the assistance of the older girls. The selection of necessitous cases is left with the head teacher and attendance officer, and there is a full record of the economic condition of the parents whose child is admitted to this privilege. Provision is made for 50 to 60 children in each school and I have satisfied myself that the food is well cooked, is sufficient in quantity, and served under suitable conditions. Certain precautions should, however, be taken against the abuse of this privilege, and I feel that it would be an advantage to secure some co-ordination of this scheme with the activities of the school medical officers in order to obtain the best results and an adequate return for expenditure incurred. A far reaching effort for the welfare of the school child has thus been instituted.

There is only one other requirement necessary to complete the equipment of these schools. I have during surprise visits to these schools noted the extreme degree of uncleanness that exists among these children. The poverty of parents and the insanitary and unclean condition of the homes they come from, present almost insuperable difficulties against every attempt by the teachers to secure or maintain a higher standard of cleanliness. But we can re-enforce the hands of the teacher at least against one form of it—personal uncleanness—by providing the school with an installation of shower baths. The expense incurred would be adequately returned by the improved tone of the school, the freshness and animation of the children.

The four Government institutions referred to in the last section, with all the advantages they enjoy, throws the assisted vernacular schools in the Municipal area into an unfavourable contrast. In many of these schools the conditions are a discredit to the controlling authorities; some of them are situated in overcrowded areas, insufficiently ventilated and badly lit; others are housed in boutiques or tenements on the road side wholly unsuited for a school; in some there is barely any furniture or other equipment of a school; some are without latrines, water supply, or playground accommodation. The managers tell me that no improvement is possible owing to the financial outlay it would involve. There is no question, however, that such school buildings are incompatible with the educational effort manifested in other directions and some relief must soon be effected. A clean and well equipped school is an investment more economical and remunerative than any other sanitary measure. Either the system of Government school buildings must be extended to other parts of the city or substantial grants given to the secretarian organizations to conform their school to modern requirements.

H. E. EKANAYAKE.

#### Medical Inspection of Schools, Northern Division :—

I took up duties as Medical Inspector of Schools, Northern Division, on April 8, 1925, and continued in this office till September 30, when I was transferred to Mandapam Camp on temporary duty as acting superintendent.

The work of hookworm treatment in the schools of the Jaffna Peninsula was superadded to my work on June 15, and was carried out by Mr. Lieversz, the Anchylostomiasis Dispenser—Microscopist up to the end of 1925. A school nurse was appointed and took up duties on July 16 last. She has been carrying on her useful work in the girls' schools during the year, and a tabulated list of the work done is attached.

I have already submitted an interim report of my work up to September 30, 1925 (on which date I was transferred). The medical inspection of the schools visited by me represent five months' work, as most of the schools were closed for the holidays in April. 103 schools were visited during the period under review—37 of these were English and Anglo-vernacular schools and colleges representing all the most important educational institutions in the Province. In 60 of the schools visited the usual medical inspection of the children was carried out. In the remainder only a sanitary inspection was carried out, these being schools closed for the holidays and local festivals, &c.

4,093 children were examined out of a total of 9,440 entered on the school rolls, and physical defects needing treatment were found in 1,341 cases. A tabulated statement of defects is appended. Of these defects—scabies heads the list with 312 cases and malaria disease with (enlarged spleens) 283, enlarged tonsils 275, and dental caries 143. The incidence of malaria as shown by enlarged spleens is very marked in Pallai, Vavuniya, Mannar, and Mullaittivu being as high as 80 per cent. in some schools. A large number of the cases of enlarged tonsils is seen in association with dental caries which is a large contributory cause of this condition.

Fifty-three cases of defective vision were found, being just under 1·3 per cent. of the cases examined. As the cases examined were limited to the younger age groups, viz., 7 to 10 years, it is likely that this percentage would be much increased by examination of the older children and “leavers” when this measure becomes practicable.

Eighty cases of anchylostomiasis with marked anaemia were seen and 42 cases of adenoid growths (in conjunction with enlarged tonsils). Not many cases of defective hearing were found, only 7 having been noted. This figure cannot be taken as accurate owing to the difficulties of testing hearing in the young children examined. After the testing for hearing and vision is organized on a wider basis with the development of medical inspection, more trustworthy figures will become available under these heads.

As I have shown in my interim report, my aim was not to make a detailed and deliberate examination of a few schools, but to make a rapid survey of the sanitary conditions prevailing in the schools as a whole and to arrive at an understanding of the average physical condition of the children in the Province and thereupon to formulate recommendations which could be applied on the widest basis to the most elementary and pressing sanitary problems in the schools. With this purpose in view I visited as many village schools as possible in the outlying parts of Mannar, Vavuniya, and Mullaittivu Districts on the one hand, and also examined all the leading secondary schools and colleges in the peninsula and made detailed reports on their sanitary conditions and defects. The conclusions reached will be summarized at the end of this report.

*Hookworm Treatment.*—A tabulated statement of the mass treatment for this infection as carried out in the Jaffna Peninsula is appended to this report. It does not properly fall within the scope of medical inspection of schools, but the treatment was initiated in July, 1925, as a measure of convenience at the request of the Director of Anchylostomiasis Campaigns with the approval of the Director of Medical and Sanitary Services. The treatment in the rest of the Province was carried out by a whole-time anchylostomiasis officer.

There is so much to be done in organizing the work of medical inspection in this Province and so many schools have to be visited, that the extra work of hookworm treatment entails a serious handicap to the medical inspector.

I recommend for the consideration of the Director of Medical and Sanitary Services that my successor be exempted from this work, which can be more satisfactorily and quickly carried out by a whole-time anchylostomiasis medical officer as in other Provinces.

Only 31 schools were actually visited in this connection, and 4,748 children treated in the period, June to September, as compared with about 35,000 cases treated by Dr. Simon, Anchylostomiasis Medical Officer, in 3 or 4 months' work in 1924. This conclusively proves that a whole-time anchylostomiasis officer would be more economical and effective for this work. I have given much thought to the sanitary problems of the schools in the Northern Province, and the conclusions which I draw below have not been hastily reached.

Modern state medicine (of which school hygiene forms an ever-increasing and all-important part, in Western countries) demands as essentials a healthy environment for the school child and a practical training in sanitary habits from day to day.

I regret to report that in a very large majority of the schools seen by me both these essentials are wanting and the need for them not realized seriously by school managers and teachers.

Out of 103 schools visited by me, 38 per cent. of the large secondary English or Anglo-vernacular schools were found to be without any latrines or most unsatisfactory ones, and 87 per cent. of the vernacular schools had no such provision at all. This is an illuminating example of the sanitary conceptions prevalent in this Province.

In a large number of the vernacular schools, even ordinary cleanliness of the buildings was wanting. Where the floors had been swept, the sweepings were generally heaped in front of or behind the buildings, and no efforts made to clear the gardens of rubbish and the litter of rags and torn papers thrown by the scholars all round the school house.

*Ventilation.*—As most of the elementary vernacular schools are built on the open type with dwarf walls, ventilation, as a whole, was satisfactory. It was deficient in boarding school dormitories in many cases where insufficient windows and ventilator openings were provided and a tendency to overcrowding was present.

*Lighting.*—Generally the lighting was good in most schools, but a very common fault was the wrong position of the seating for the children and in the placing of the blackboards in relation to the source of light. In many cases the classes seemed to be disposed more for the convenience of the teacher and not at all in the interests of the pupil.

*Overcrowding.*—As most of the schools in the Province appear to have been built at a time when our modern sanitary ideals were not prevalent, one finds in nearly all the elementary schools a tendency to crowd too many classes into one open hall. Teachers are apparently so habituated to noise that they do not realize that under such circumstances classes must mutually disturb each other, especially in repeating lessons aloud—as is the common habit.

It is much to be regretted that no standard of building is laid down and no attempt made to submit plans for new schools to a Sanitary Engineer or Public Health Officer for approval. In most of the boarding schools the dormitories are generally overcrowded and this is a great evil. As the rate of boarding fees is a very low one in this Province, economy in the expenses of building and management is obtained at the cost of overcrowding and its attendant evils.

*School Furniture, &c.*—Only one or two of the big colleges in Jaffna have any modern school furniture. In most of the others the furniture is generally of a cheap and antiquated type, seldom repaired or maintained in good condition. Blackboards are seldom kept black and often a shiny paint is used with painful results to the children's eyes.

*Water Supply.*—Generally there is a well in the school compound to which the thirsty pupil has to resort with whatever vessels is available for drawing water for himself. In very few schools have I found any thoughtful provision made for this elementary need of drinking water though the cost of 4-gallon tin vessel supplied with a tap should be within reach of even the poorest school.

These comments of mine may appear rather sweeping or hypercritical, but I must explain that I did not set out on my sanitary survey of the schools expecting to find all the village schools equipped with all modern sanitary conveniences and of a high sanitary standard according to the Western notions. I set out rather to find out whether easily attainable minimum requirements were met, e.g., ordinary simple

cleanliness of school houses and furniture obtainable by sweeping and dusting; to find whether practical objective lessons in hygiene were given to the pupils in inculcating habits of tidiness and personal cleanliness and the discouragement of insanitary habits. The results of this inquiry have been very disappointing especially when we consider the large number of schools in the Province and the keenness of the inhabitants to acquire education.

The work that a Medical Inspector of Schools can do in this backward Province (speaking from the sanitary standpoint) can be one of immense value. In fact, the only hope of arousing a sanitary conscience in the population and of building up a healthy generation depends on what the children are taught. There is a vast amount of apathy, ignorance, and prejudice against any sanitary advance in the majority of the elders which cannot be overcome from the top, but can best be done in the schools. The following quotation from the 1922 report of the Chief Medical Officer of the Board of Education in England could with advantage be reprinted and hung before each teacher in the schools in this Province.

"It is in the schools that the basis of education in hygiene is laid. The fruits of this education will in after years be a help or a hindrance to the work of the Health Department in all its sphere of activity, and no amount of talking or lecturing will give the child a health ideal. What he absorbs and what he will ultimately practise is what he learns by example. The insistence upon cleanliness of the person of the child will develop the habit of cleanliness in the adult. Scrupulous cleanliness in the school will lead to similar cleanliness in the house; closed windows with defective illumination and lack of regard for fresh air will be followed by similar conditions in the house, for the child of to-day is the householder of to-morrow. Obsolete and unclean lavatory and sanitary conveniences in the school are a danger to present health and a life long disadvantage to the child who never cultivates at school the use of and desire for better things. They set the child a bad example and imperceptibly teach it wrong lessons in the way of health."

These remarks apply with the greatest force to this country and Province where there is an almost universal prejudice against the use of latrines. Teachers and other educated people will hotly argue against them as unsuitable for tropical conditions.

Scabies is rampant in some of the schools and is not looked upon as a dirt disease, but as something desirable or as having an obscure protective influence against other diseases.

I have been so convinced that the first and most pressing duty of a school medical officer in this Province is sanitary propaganda that I have spent a considerable portion of my time in writing and publishing in three of the Anglo-vernacular papers in Jaffna—a series of "Health talks to teachers and parents" which has aroused much interest. This work should be followed up by my successor with lantern lectures of a simple type, to teachers and others, and by efforts to improve the teaching of practical hygiene (as opposed to an examination subject) in the schools. Simultaneously with this, I have already recommended that every single school in the Province should be compelled to provide some form of latrine (even if it be merely the camp trench type—for the schools that cannot meet the expense of buying the portable latrine in the market). My own feeling is that a portion of the Government grant to schools should be earmarked for the provision of latrines. The cost of these latrines to poor country schools would be greatly reduced if the Government factory or the firms who stock portable latrines—could manufacture a simple iron platform with two seat holes on which a suitable superstructure of cadjan or galvanized iron could be built as funds permit. Till at least this elementary form of latrine is provided in every school and its use insisted on we cannot make any head-way in our teaching of school hygiene.

*Medical Inspection of the School Child.*—After the provision for the sanitary needs of the schools, an investigation should be carried out to determine the average physical standard prevalent among school children in this Province. This could be done in the course of the routine examination. A portable weight and height testing apparatus is needed and a tape and spirometer for testing lung capacity would be very useful.

The problem is how one officer can visit over 450 schools with a probable school population of 40,000. It will be barely possible for this to be done once in two or three years, and I have suggested, for the consideration of the Director of Medical and Sanitary Services, the utilization of the Government Medical Officers and Apothecaries in the Province as part-time school medical officers for the schools within easy reach of them in their own districts. Without some such provision to help the medical inspector any really effective work would not be done.

From the report of the School Medical Service in England for 1922 it will be seen that 2,162 school medical officers were employed and 2,386,750 children were examined during that year, which gives just over 1,100 examined by each medical officer—as compared with about 40,000 whom I have to examine. Of these 2,162 school medical officers—upwards of 1,150 were private practitioners whose services were arranged for by the Local Education Authorities. Similar arrangements are in operation in India (in Madras, Mysore, Bombay, &c.), and I think that there is the solution for an economical and immediately available means of supplementing the school medical inspection in this Province. Another great advantage in using the local medical officers for the district schools is that it will ensure more touch between the parents of the children and the inspecting officer and help in the following up of cases so essential to success in this movement. It will also incidentally bring the District Medical Officers more into touch with the schools with mutual benefit.

*School Cliniques.*—Jaffna town is the only centre where a definite school clinique was started—where facilities for eye-testing, ear, and throat work exist. An unqualified dentist is also resident in the town to whom some of the children appear to have resorted. It goes without saying that these facilities need to be extended. I hope that it will be possible to get an itinerant dental surgeon for work in the Province as that will be a great boon. Some arrangement is also necessary whereby school children may be supplied with spectacles at a minimum price if correction of defective sight is to be a success in this Province.

The utilization of the District Medical Officers can be extended to their treatment of the children at the Government dispensaries at regular clinics where proper records can be kept and sent to the Medical Inspector for the Province for collection and final disposal. In conclusion I may say that several of the big schools in the Jaffna District are built and run on modern lines and are a credit to the Island, and the remaining secondary schools need to be similarly standardized.

I believe that a considerable amount of good has already been done in these experimental initial stages of this medical inspection work, and this is almost entirely due to the lively co-operation and keen interest of the Divisional Inspector of Education, Northern Division, and the Head of the Department in giving effect to my recommendations.

Without the hearty co-operation of all educational authorities down to the most junior teacher no great progress can be looked for; but I believe this co-operation will be possible if the spirit of interest be maintained, and a continuity of effort aimed at. On being promoted to another sphere of duty, I leave this work with regret as I am convinced of the immense amount of good it can effect if carried out with whole-hearted enthusiasm and judgment.

H. U. LEEMBRUGGEN.  
Medical Inspector of Schools, N.D.

MEDICAL INSPECTION OF SCHOOLS.

Statement of Defects.

Number of schools visited, 103 ; number of schools medically examined, 60 ; number of register, 9,440 ; number examined, 4,093 (including those examined for hookworm treatment).

Date of Inspection April to September, 1925.

Defective vision	..	..	53	Pyorrhoea alveolaris	..	..	13
Conjunctivitis, catarrhal	..	..	7	Other dental diseases	..	..	2
Do. granular	..	..	7	Heart diseases	..	..	2
Do. phlyctenular	..	..	2	Anchylostomiasis	..	..	80
Blepharitis	..	..	2	Malarial diseases (with enlarged spleen)	..	..	283
Other eye diseases	..	..	9	Scabies	..	..	312
Enlarged tonsils	..	..	275	Eczema	..	..	3
Adenoids	..	..	42	Other skin diseases	..	..	20
Submaxillary and cervical glands	..	..	10	Malnutrition	..	..	14
Other diseases of nose and throat	..	..	34	Spinal curvature	..	..	2
Defective hearing	..	..	7				
Diseases of the ear	..	..	21				1,343
Dental caries	..	..	143				

H. U. LEEMBRUGGEN,  
Medical Inspector of Schools, N.D.

Number of Schools.	Name of School.	Total Inspected.	Unclean Heads.	Itch.	Carious Teeth.	Discharge from Ears.	Enlarged Tonsils.	Eczema.	Anaemia.	Number of Visits.
1 ..	Chundiculy Girls' School and Boarding ..	193 ..	27 ..	4 ..	4 ..	— ..	— ..	— ..	— ..	3
2 ..	Vembadi Girls' School and Boarding ..	182 ..	53 ..	3 ..	4 ..	1 ..	— ..	— ..	— ..	3
3 ..	Vembadi Anglo-Vernacular and Training School ..	133 ..	23 ..	15 ..	2 ..	— ..	— ..	— ..	— ..	2
4 ..	Ramanathan College (Hindu Girls') ..	173 ..	37 ..	— ..	— ..	— ..	— ..	— ..	— ..	1
5 ..	St. Charles Mixed Tamil School ..	149 ..	14 ..	23 ..	2 ..	17 ..	— ..	— ..	— ..	3
6 ..	Holy Family Convent ..	217 ..	36 ..	6 ..	4 ..	1 ..	5 ..	— ..	— ..	4
7 ..	Holy Family Vernacular School ..	178 ..	19 ..	12 ..	4 ..	— ..	— ..	— ..	2 ..	2
8 ..	Kopay Vernacular Mixed School ..	121 ..	15 ..	5 ..	6 ..	4 ..	— ..	— ..	1 ..	1
9 ..	Uduvil Girls' School and Boarding ..	471 ..	74 ..	6 ..	3 ..	1 ..	3 ..	— ..	— ..	1
10 ..	St. James Tamil Girls' School ..	92 ..	14 ..	16 ..	6 ..	— ..	— ..	— ..	3 ..	3
11 ..	St. Marys' Tamil Girls' School ..	58 ..	5 ..	9 ..	— ..	— ..	— ..	— ..	— ..	2
12 ..	St. Anthony's Tamil Girls' School ..	58 ..	10 ..	7 ..	1 ..	— ..	— ..	— ..	1 ..	3
13 ..	Chundiculy Mixed Tamil Girls' School ..	66 ..	6 ..	5 ..	— ..	— ..	— ..	— ..	— ..	3
14 ..	Puttur Vernacular Mixed School ..	77 ..	17 ..	7 ..	— ..	— ..	— ..	— ..	— ..	1
15 ..	Vannarponnai Mixed Tamil School ..	88 ..	7 ..	1 ..	2 ..	1 ..	5 ..	— ..	3 ..	1
16 ..	St. Benedict Mixed School (Nalloor) ..	57 ..	8 ..	9 ..	— ..	1 ..	— ..	— ..	3 ..	3
17 ..	Koddady Mixed School Tamil School ..	143 ..	14 ..	4 ..	2 ..	— ..	— ..	— ..	2 ..	3
18 ..	Navanturai Tamil Mixed School ..	71 ..	9 ..	7 ..	— ..	— ..	2 ..	— ..	1 ..	3
19 ..	Nalloor Vernacular Mixed School ..	86 ..	14 ..	2 ..	— ..	1 ..	— ..	— ..	— ..	2
20 ..	Nalloor South Mixed School ..	59 ..	11 ..	3 ..	— ..	— ..	— ..	— ..	— ..	1
21 ..	Anaipanthi Mixed School ..	108 ..	22 ..	5 ..	— ..	— ..	— ..	— ..	— ..	1
22 ..	Chernia Street Mixed School ..	204 ..	22 ..	11 ..	— ..	2 ..	1 ..	— ..	— ..	2
23 ..	Kaladi Vernacular Mixed School ..	98 ..	11 ..	2 ..	— ..	— ..	— ..	1 ..	— ..	1
24 ..	Chetty Street Mixed School ..	111 ..	10 ..	14 ..	10 ..	— ..	— ..	— ..	6 ..	1
25 ..	Moor street Mixed School ..	51 ..	5 ..	10 ..	— ..	— ..	— ..	— ..	6 ..	1
26 ..	Vivekananda Mixed School ..	86 ..	5 ..	8 ..	— ..	— ..	— ..	— ..	6 ..	1
27 ..	Nadutheru Mixed School ..	66 ..	7 ..	5 ..	— ..	1 ..	— ..	1 ..	5 ..	1
28 ..	Uyarapulam Mixed School ..	51 ..	10 ..	3 ..	1 ..	— ..	— ..	— ..	10 ..	1
29 ..	Uyarapulam (Sudumalai) Mixed School ..	27 ..	5 ..	11 ..	— ..	— ..	— ..	— ..	8 ..	1
30 ..	Periyapulam Mixed School ..	86 ..	24 ..	6 ..	— ..	— ..	— ..	— ..	16 ..	1
31 ..	Chiviatheru Mixed School ..	64 ..	13 ..	5 ..	2 ..	— ..	1 ..	— ..	11 ..	1
32 ..	Nalloor Mankyarkarasee Mixed School ..	70 ..	10 ..	3 ..	— ..	— ..	— ..	— ..	15 ..	1
33 ..	Thirunelvely Vernacular Mixed School ..	92 ..	8 ..	2 ..	— ..	— ..	— ..	— ..	6 ..	1
34 ..	Do. ..	67 ..	12 ..	1 ..	— ..	— ..	— ..	— ..	12 ..	1
35 ..	Kaikula Mixed School ..	78 ..	12 ..	— ..	— ..	— ..	— ..	— ..	19 ..	1
36 ..	Kokuvil Mixed School ..	109 ..	13 ..	9 ..	— ..	— ..	— ..	— ..	— ..	1
37 ..	Kockuvil Station Mixed School ..	60 ..	3 ..	2 ..	— ..	— ..	— ..	— ..	11 ..	1
38 ..	Kockuvil West Mixed School ..	57 ..	14 ..	— ..	— ..	— ..	— ..	— ..	13 ..	1
39 ..	Gnanapanditha Vidiasalai Mixed School ..	57 ..	8 ..	2 ..	— ..	— ..	— ..	— ..	15 ..	1
		4,214	627	243	53	30	17	2	175	65

H. U. LEEMBRUGGEN,  
Medical Inspector of Schools, N.D.

Statement of Hookworm Treatment of Schools in the Jaffna Peninsula for the  
Period June to December, 1925.

Number of Schools visited.	Number of Children examined.	Number exempted from Treatment.	Numbr treated.	Drugs used.	Number examined Microscopically.
31 ..	6,859 ..	282 ..	4,748 ..	Carbon tetrachloride and chenapodium oil	21

H. U. LEEBRUGGEN,  
Medical Inspector of Schools, N.D.

47. *Medcal Aid to Immigrant Coolies.*—The number of immigrants in Ceylon who passed through the Mandapam depôt during the year was 186,248, estate labourers 125,585, and miscellaneous passengers 60,663.

The following are the figures for the previous years since the opening of the permanent camp in 1917 :—

Year.	Number of Immigrants passed.		Total.
	Estate Labourers.	Miscellaneous Passengers.	
1917	46,267	46,881	93,148
1918	44,010	41,431	85,441
1919	112,195	53,360	165,555
1920	45,912	57,809	103,721
1921	25,344	52,132	77,476
1922	78,106	47,740	125,846
1923	90,289	42,240	132,709
1924	153,989	53,106	207,095
1925	125,585	60,663	186,248

From the point of view of immigration this year stands second, the record year having been 1924, during which 207,095 persons passed through to Ceylon. A special feature of this year is that during the last four months estate labourers emigrated in larger numbers than during the same period in previous years, the figures for 1924 and 1925 being 27,360 and 43,949 respectively for the last four months. Although it cannot be said that the agricultural conditions in some of the districts of South India were unsatisfactory, the number of immigrants passed was large, which is solely attributable to the very favourable conditions available to the recruits in Ceylon.

During December the railway line between Madura and Paramakkudi was breached in several places and there was no through running of trains from Madura. Consequently, no estate labourers arrived from Trichinopoly from December 12 to December 14. The ferry steamer service between Dhanushkodi and Talaimannar was suspended for one day, viz., December 13.

*Works.*—All buildings and roads were maintained in excellent order. The following works were completed during the year :—

- (1) Covering the wells with wooden platforms in the residential area, fresh water area and quarantine wards.
- (2) Extension of sewage outlet No. 1 and improvements to outlet No. 3.
- (3) Provision of a drinking water tap at the Camp Railway Station.
- (4) Two sets of latrines for attendants of the smallpox hospital.
- (5) Fencing the fresh water area with barbedwire.
- (6) Extension of fresh water supply by the addition of 9 wells—3 wells in “ A ” section and 1 in “ B ” section remain to be connected with the water system.
- (7) Two blocks of 2 units each as quarters for clerks.
- (8) Lavatory for the Office of the Assistant Ceylon Labour Commissioner.
- (9) Renewal of Farmer’s boilers in Hindu kitchen.

The following works at a cost of Rs. 27,140 have been sanctioned for 1926 :—

- (1) Extension to the liquid fuel storage shed.
- (2) Repairs to 3 steam cookers in the Hindu kitchen.
- (3) Latrine for engineering contractor’s staff.
- (4) Latrine for feeding contractor’s office.
- (5) Latrine at the Camp Railway Station.
- (6) Extension to Chief Clerk’s quarters.
- (7) Rat-proof rice store.
- (8) Latrine and bathroom for attendants of the General Hospital.
- (9) Improvements to fresh water supply.

*Water Supply.*—The fresh water supply was fairly satisfactory. Owing to the usual shortage of water during the dry months, six coolies were employed from April to October in drawing water from the superficial wells in the quarantine wards and filling the bathing troughs, this water being used for bathing and washing purposes only. The Government Analyst visited the camp in April and tested the water in nearly all the wells. The results were, on the whole, satisfactory.

A duplicate water supply in the north-east section of the camp is under consideration and experimental wells are being sunk in that area. When satisfactory results are obtained, it is hoped that the only difficulty the camp has to face regarding an adequate water supply will be removed.

Sea water is used for the flushing of latrines.

*Electric Lighting.*—The lighting in camp was satisfactorily maintained during the year. As the electrical plant is considered to be working at its full load, the question of increasing it will be taken in hand in the near future.

*Sewage Disposal.*—The water carriage system has worked satisfactorily. The improvements to the two sewage outlets have been completed.

*Feeding.*—Messrs. Spencer & Co. continue to be the diet contractors, and the food supply during the year was always ample and of good quality.

*Rainfall.*—The total rainfall during the year exceeded that of the previous year by 18·98 inches and was nearly equal to the record of 1923. November and December were the wettest months with a fall of 27·27 inches.

The distribution of the rainfall was as follows :—

	Inches.
First quarter .. .. .	7·23
Second quarter .. .. .	0·07
Third quarter .. .. .	0·48
Fourth quarter .. .. .	35·10
	<hr/> 42·88

*Claimed and Refused Cases.*—1,687 cases were dealt with during the year, as compared with 1,861 in the preceding year.

Rejection on medical grounds .. .. .	86
Rejection by protector of emigrants, including claimed and refused cases .. .. .	1,601
	<hr/> 1,687

*Salt Department.*—338 labourers recruited by the Ceylon Labour Commission were passed for this department.

*Pearl Fishery.*—4,783 persons including divers (Arabs and Kilakarai men) passed through this camp for the Pearl Fishery at Marichchikaddi.

*Steamer Crews.*—Forty-five steamer crews totalling 1,888 persons who arrived from Bombay and Calcutta were passed to Ceylon after vaccination and disinfection.

*General : (a) School.*—There were 2 inspections by the Inspecting Officers of the Madras Government whose reports were satisfactory. The number of pupils on the roll on December 31 was 116. The school fees recovered amounted to Rs. 421·40 and the grant obtained from the Madras Government and credited to revenue was Rs. 267·75. An additional teacher was appointed from January 1. The 3 teachers have worked satisfactorily. The Madras Educational Authorities recommend the appointment of a fourth teacher.

Boy Scout and Girl Guide movements have been started in connection with the school. It is hoped that they will prove a success as keen interest is taken in them by all concerned.

A permanent building for the school is an urgent need.

*(b) Reading Room, Library, and Sports Club.*—These institutions continue to serve a useful purpose and have been satisfactorily maintained during the year. A separate building to serve as a Library and Reading Room is a much-felt want.

*(c) Planting.*—The large number of casuarina and other shade trees planted during previous years appear to be thriving. A supply of doob grass cuttings obtained from Peradeniya has also been planted.

*Benevolent Fund.*—Thirty-three stranded Ceylonese were helped from the fund at a cost of Rs. 133·69. The balance at credit at the end of the year was Rs. 148·27.

*Expenditure.*—Twenty-eight cents per head per diem was the cost incurred by Government on 186,248 immigrants passed to Ceylon ; 25 cents per head per diem was the cost incurred by the Immigration Fund on 125,585 estate labourers ; and 22 cents the cost per head per diem on 44,985 passengers passed after full quarantine. A statement of the detailed expenditure appears in annexure No. 9.

*Visitors.*—The following visited the camp during the year. A few extracts from their remarks are given in annexure No. 1. There were eight visits of inspection by the non-official visitors appointed by the Madras Government.

(a) *From Ceylon.*

- (1) His Excellency the Officer Administering the Government.
- (2) The Chairman, Board of Immigration and Quarantine.
- (3) The Director of Public Works.
- (4) The Director of Medical and Sanitary Services.
- (5) The Controller of Indian Immigrant Labour.
- (6) The Deputy Inspector-General of Police.
- (7) The Assistant Government Agent, Mannar.
- (8) The Director, Anchylostomiasis Campaign.
- (9) The State Director of International Health Board.
- (10) R. G. Coombe, Esq., Representative of the Planters' Association.

(b) *From India.*

- (1) Hon. Sir T. N. Sivagnanam Pillai, Minister for Development, Madras.
- (2) The Commissioner of Labour, Madras.
- (3) The Surgeon-General with the Government of Madras.
- (4) The Director, Anchylostomiasis Campaign, Madras.
- (5) The Ceylon Emigration Commissioner, Trichinopoly.
- (6) The Emigration Agent of the Government of India.
- (7) The District Collector, Ramnad.
- (8) The District Medical Officer, Ramnad.
- (9) The Protector of Emigrants, Madras Government.
- (10) The Medical Inspector of Emigrants, Madras Government.

Table No. 9.—Statement of Expenditure on Mandapam Camp from January to December, 1925, and Cost per Head.

Sub-head.	Expenditure.	Total Expenditure.	Rate per Head per Day.	Total Cost per Head for 7 Days.	Remarks.
	Rs. c.	Rs. c.	Rs. c.	Rs. c.	
A.—Government Vote—					
(1) Emoluments ..	103,321 35				
(2) Travelling ..	744 45				
(3) Maintenance of Camp Stationery ..	11,622 15				
(4) Upkeep of disinfectors, &c. ..	329 30				
(5) Drugs, medicines, &c. ..	1,988 6				
(7) Dieting, &c. ..	4,111 92				
(9) Incidental expenses ..	133,817 25				
(11) Uniforms ..	363 24				
(12) Maintenance of and minor improvements to buildings and works at Mandapam ..	1,310 96				
(13) Cost of working water sewage scheme, &c., Mandapam ..	21,544 12				
	21,969 38				
<i>Special Expenditure.</i>					
(14) Quarantine Camp at Mandapam ..	59,751 2	360,873 20	0 28	1 94	} Cost to Government Cost to Estate
B.—Paid by Emigration Fund— Diets to Labourers, plates, &c., excluding train fare ..	—	223,405 48	0 25	1 78	
C.—Paid by Passengers—					
I.e., Cash to contractors for meals ..	—	57,951 6	0 22	1 29	(For 6 days) cost to public
Total estate labourers for 1925 ..					125,585
Passengers passed through direct ..					15,678
Passengers passed after quarantine in Camp ..					44,985
					60,663
Total passed through ..					186,248

The general health of the camp during the year under review has been satisfactory. The treatment of estate labourers for anchylostomiasis was begun in January, and is being carried out with great success. 53,187 persons were so treated.

At the Camp Dispensary 8,246 patients were treated and they paid a total number of 11,413 visits. The number of out-patients treated and the total number of their visits in 1924 were 13,752 and 22,008 respectively. There were 82 deaths in camp during the year including 65 deaths in the Camp Hospital. Of the 17 deaths in the camp 13 were among infants. 920 in-patients were treated and the death rate for the year was 7·06, as against 1,033 and 5·61, respectively, the previous year. Of the deaths in hospital in 1925, 23 occurred within 48 hours of admission. There were 27 cases of cholera, 26 among estate labourers with 20 deaths and 1 among the staff with 1 death; 4 cases of small-pox, 2 among estate labourers with 1 death, 1 among passengers, and 1 among staff with no deaths; 26 of pneumonia with 7 deaths and 41 of dysentery with 7 deaths. 126,713 primary and revaccinations were performed during the year; and of these 68,454 were successful. The corresponding figures for the previous year were 126,421 and 59,494, respectively.

*Government Hospitals and Dispensaries in Planting Districts for Immigrant Coolies.*—There are 59 such hospitals with accommodation for 4,988 patients and staffed with medical officers, apothecaries, nurses, and attendants. Apart from the out-patient department attached to each of these hospitals there are 106 outdoor dispensaries in planting areas.

*Medical Inspection of Estates.*—The inspecting staff consisted of 3 Inspecting Medical Officers and 3 Assistants.

The area under the cultivation of rubber and tea is divided into three inspectorates :—

- (1) Central Province under the Inspecting Medical Officer, Kandy ;
- (2) Uva, North-Western Province, and Southern section of the Province of Sabaragamuwa under the Inspecting Medical Officer of Uva ;
- (3) Western and Southern Provinces and Northern section of the Province of Sabaragamuwa under the Inspecting Medical Officer of Colombo.

The number of estates scheduled for inspection was 2,602. The average number of inspections done by each Inspecting Medical Officer during the year was 22 a month. Eighty estate hospitals were inspected and the estates they served received a rebate on the duty paid by each on the export of its produce in proportion to the marks gained at the inspection. The sum of Rs. 110,300 was paid by Government as rebate, under the provisions of section 27 of Ordinance No. 9 of 1912, from October, 1924, to September 30, 1925, as against Rs. 111,530 the previous financial year. The cost of construction, maintenance, equipment, and salary of officers and staff of these hospitals are borne by the proprietors of estates. Free drugs to the value of 50 cents per annum for each labourer employed on the estate were issued to the estate hospitals and dispensaries and the total cost of these free issues during the year was Rs. 222,534·22, as against Rs. 193,914·49 the previous year. The majority of these hospitals and dispensaries are well constructed and well equipped; the number of dispensaries on estates was 625. The Inspecting Medical Officers report that there is a general improvement as regards labour, housing, and general sanitary conditions on estates. A good deal of activity in new line construction is apparent on a large number of estates and the construction of new and permanent latrines is being pushed on rapidly except in some of the estates in the Central Province, where there is only a very slow progress. Water supplies to lines have been improved. Piped water service to the lines was

being introduced in place of the open spouting and hill side streams and ravines, where the water was open to pollution. In the Central Province there seems to be a very slow progress, 129 estates having bad supplies which are open to pollution.

The general health of immigrant coolies on estates is steadily improving as a result of better housing and sanitary conditions particularly the paved courtyards round lines and better drainage. The importance of child welfare has received the attention of superintendents and managers of estates and expectant mothers, weekly children and non-working children are specially cared for. Expectant mothers are granted release from work when they wish it and free rations supplied, or light work is allowed them near their lines. Weakly children are provided with milk or any other nourishment suitable to their age. All children of a non-working age are given a free allowance of rice weekly or a free-cooked meal of rice and curry daily.

48. *International Health Board Rockefeller Fellowships*.—(1) There is an arrangement in existence between the International Health Board of the Rockefeller Foundation and the Ceylon Government for the grant of an annual Fellowship in Public Health to Ceylonese Officers, the cost being met in alternate years by the International Health Board and the Government.

Among the requirements for these Fellowships laid down by the International Health Board the following may be quoted :—

“ The Fellowships are designed to meet definite needs in Public Health Service. They are granted only to persons carefully selected for the work that needs to be done.”

“ In the selection of Fellows high professional and scientific qualifications as well as dependability and qualities of leadership are sought.”

(2) The officer selected for the 1925 Fellowship was Dr. K. J. Rustomjee (International Health Board Fellow). A course of studies in Anti-Malaria work has been planned for him by the International Health Board and before his return to Ceylon in 1926 he will have been given the opportunity of studying the subject not only in the Southern States of America but also in Italy, Palestine, India, and the Federated Malay States.

(3) On the occasion of a visit during April, 1925, to the United States of America as the guest of the International Health Board, the Director in a discussion with the Headquarter Staff of the International Health Board as to Public Health in Ceylon, stressed the need for the strengthening of the Sanitary Branch of the Medical Department in qualified personnel and the difficulty experienced in obtaining such men. The International Health Board was good enough to offer through him to the Ceylon Government (who gratefully accepted them) 3 Fellowships in 1925 to suitable candidates to meet this need.

The Director was also successful in convincing the Government and the Finance Committee of the Legislative Council as to the urgent need for trained public health personnel with the result that 3 Government Fellowships were granted in addition to the 3 proffered by the International Health Board.

The 6 selected Fellows left Ceylon in August, 1925, and from all accounts are pursuing their studies satisfactorily.

49. *Laboratory Assistants*.—At the present time the returns of malaria are scientifically inaccurate and valueless because the diagnosis of the disease is not made in the majority of cases as a result of blood examination. It was therefore proposed to train technicians who will eventually be in charge of district laboratories and whose function will be to carry out for the district in which the laboratory is situated diagnostic examinations of blood, sputum, and faeces. Twelve laboratory assistants were appointed with effect from October 1, 1925. They have passed the London Matriculation or higher examination and were trained in the respective branches of laboratory work under the control of the Director, Bacteriological Institute, the Director, Anchylostomiasis Campaign, the Pathologist, General Hospital, and the Malariologist for the following procedures :—

- (1) To stain and recognize malarial parasites.
- (2) To recognize the ova of helminths.
- (3) To recognize the commoner anophelines and their value.
- (4) To recognize B. pestis microscopically.
- (5) To stain and recognize films for gonorrhoea.
- (6) To do the microscopic test for agglutination for typhoid.
- (7) To isolate V. Cholerae.
- (8) To stain sputum for tubercle bacilli.
- (9) To examine stools for entamoebae histolytica.
- (10) To examine urines for albumen, sugar, pus, cells, &c.
- (11) To obtain specimens from post mortems, &c.

50. *Ante-Natal and Baby Clinics*.—The first ante-natal clinic was started at the De Soysa Lying-in Home, Colombo, in May, 1921, with a view to reduce the infantile mortality. The following figures show the numbers of attendances at this clinic for the last 5 years ending December 31, 1925 :—

Year.	Number of Pregnant Mothers.			Number of Visits.		
1921	..	..	..	93	..	97
1922	..	..	..	216	..	226
1923	..	..	..	319	..	326
1924	..	..	..	335	..	343
1925	..	..	..	707	..	713

It will be seen from the above figures that there is a steady increase in the attendances annually.

(2) In November last, I gave instructions to all district medical officers in charge of hospitals to which are attached a matron to start Ante-Natal and Baby Clinics, the object aimed at being to reduce infantile mortality by instructing mothers both prior and subsequent to child birth in the laws of health

governing themselves and their children. The medical officers were exhorted to take a personal and enthusiastic interest in this matter inviting the association of any existing social service organisations. The results of these clinics are being watched by me keenly, and I trust that the public will accord towards this move every encouragement.

51. The following is a list of medical and sanitary requirements for which provision has not yet been made :—

- (1) A Medical Research Institute.
- (2) The rebuilding of the Medical College, commencing with an up-to-date Physiological Laboratory, and Museum.

Colombo, June 11, 1926.

J. F. E. BRIDGER,  
Director of Medical and Sanitary Services.

APPENDIX.

SCIENTIFIC REPORTS, &c.

52. *Government Bacteriological and Pasteur Institutes.*—Report of the Director, Dr. Lucius Nicholls, for the year 1925 :—

A.—BACTERIOLOGICAL INSTITUTE.

During 1925 there were examined at the Bacteriological Institute 12,095 specimens, this is an increase of nearly 4,000 specimens over 1924. The number of specimens examined for enteric fever, syphilis, plague, and cholera show notable increases.

The fees received at the Bacteriological Institute totalled Rs. 5,025, and the Pasteur Institute, Rs. 1,948·44.

The following table classifies these specimens :—

Specimens.	Official.	Private.	Total.	Positive.	Negative.
Blood for typhoid (widal)	.. 2,089	.. 44	.. 2,133	.. 972	.. 1,161
Blood for paratyphoid (widal)	.. 613	.. 29	.. 642	.. 14	.. 628
Blood for paratyphoid B (widal)	.. 610	.. 28	.. 638	.. 1	.. 637
Blood for Wassermann test	.. 1,687	.. 161	.. 1,848	.. 691	.. 1,108
Blood for malaria ..	.. 31	.. 22	.. 53	.. 5	.. 48
Human material for <i>B. pestis</i>	.. 35	.. —	.. 35	.. 9	.. 26
Rats for <i>B. pestis</i> ..	.. 1,550	.. —	.. 1,550	.. 6	.. 1,544
Sputa for tubercle bacilli	.. 62	.. 29	.. 91	.. 32	.. 59
Sputa for pneumococci	.. 6	.. 1	.. 7	.. 3	.. 4
Faeces for amoebae ..	.. 32	.. 59	.. 91	.. 15	.. 76
Faeces for <i>B. dysenteriae</i>	.. 9	.. 3	.. 12	.. 1	.. 11
Faeces for anchy ova, &c.	.. 14	.. 18	.. 32	.. 21	.. 11
Faeces for <i>B. typhosus</i> ..	.. 3	.. —	.. 3	.. —	.. 3
Urine for <i>B. typhosus</i> ..	.. 1	.. —	.. 1	.. —	.. 1
Urine for microscopical examination	.. —	.. 1	.. 1	.. —	.. —
Urine for chemical examination	.. 40	.. 8	.. 48	.. —	.. —
Urine for bacteriological examination	.. 28	.. 3	.. 31	.. —	.. —
Secretions for <i>B. diphtheriae</i>	.. 54	.. 9	.. 63	.. 19	.. 44
Secretions for gonococci	.. 67	.. 9	.. 76	.. 17	.. 59
Evacuations for cholera vibrio	.. 1,219	.. —	.. 1,219	.. 48	.. 1,171
Scrapings for spirochaetes	.. 1	.. 6	.. 7	.. 2	.. 5
Secretions for <i>B. leprae</i>	.. 9	.. —	.. 9	.. 2	.. 7
Miscellaneous specimens for examination	.. 63	.. 6	.. 69	.. —	.. —
Water for examination	.. 22	.. 10	.. 32	.. —	.. —
Auto-vaccine ..	.. 35	.. 10	.. 45	.. —	.. —
Typhoid-vaccine (doses)	.. 1,800	.. 4	.. 1,804	.. —	.. —
Gonococcal vaccine (doses)	.. 1,395	.. —	.. 1,395	.. —	.. —
Cholera vaccine (doses)	.. 150	.. —	.. 150	.. —	.. —
Plague vaccine (doses)	.. —	.. 5	.. 5	.. —	.. —
B. Coli vaccine (doses)	.. 5	.. —	.. 5	.. —	.. —
Total	.. 11,630	.. 465	.. 12,095	.. —	.. —

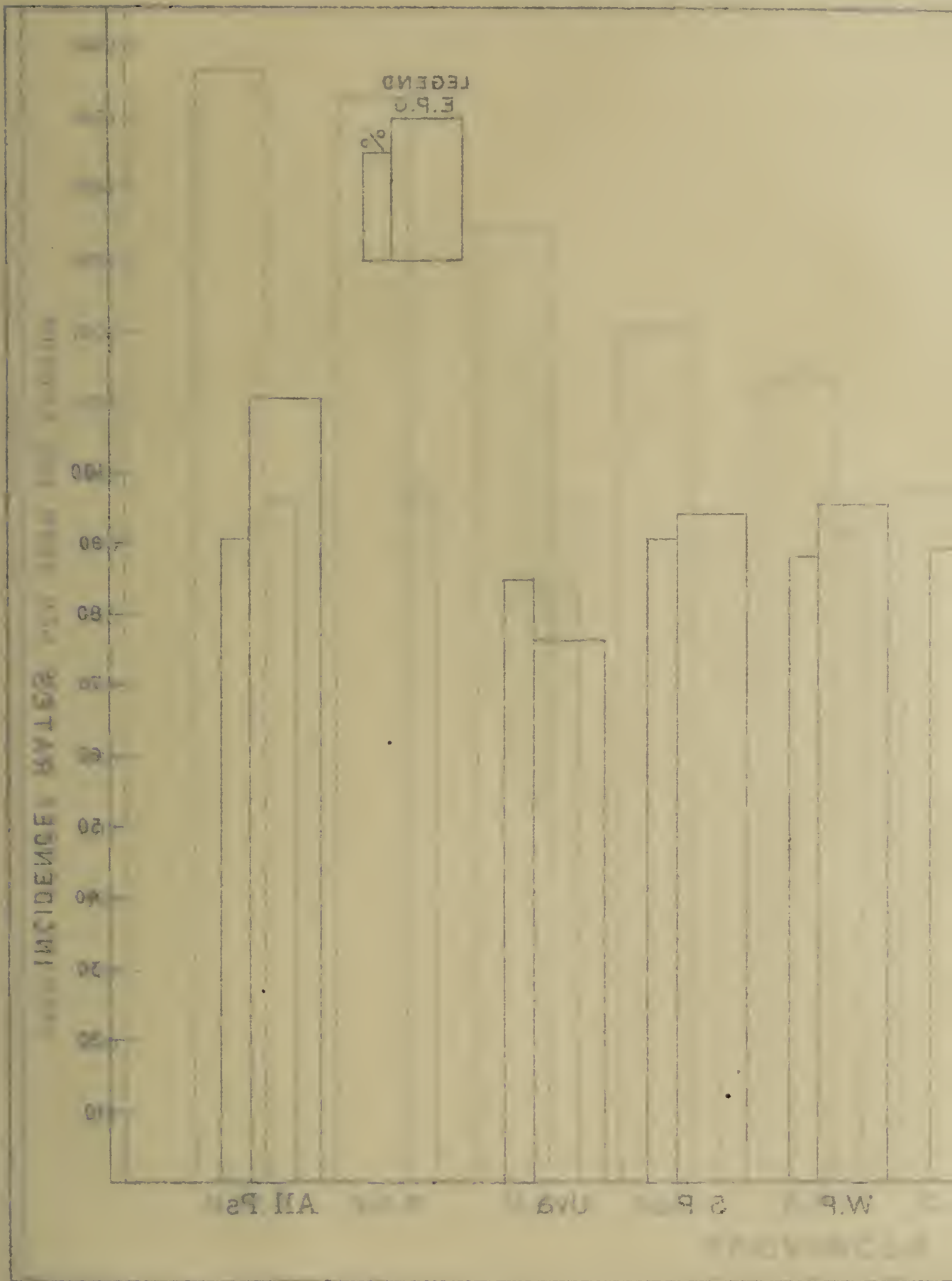
A certain amount of research work has been done during the year, and the results of this work have been published in the Ceylon Journal of Science, Medical Section.

The following papers have been published :—

1. “ Bacillus Typhosus Morphologically compared with certain Bacilli present in Natural Waters ” by Lucius Nicholls, M.D., and Edwin Burgess.
2. “ Immunization to Bacterial Diseases by Absorption through Mucous Membranes and the Skin,” by Lucius Nicholls, M.D.
3. “ A case of Mass Infestation with Cysticercus Cellulosae,” by Lucius Nicholls, M.D.
4. “ Note on a Nematode Larvae removed from the Eye of a Man,” by Lucius Nicholls, M.D.
5. “ Verminous Ophthalmia of the Horse in Ceylon ” by Lucius Nicholls, M.D. and M. Crawford, M.R.C.V.S.
6. “ The Incidence of Pulmonary Tuberculosis in Colombo as indicated by an examination of Sputa found in Public Places ” by Richard de Silva.  
(Mr. de Silva found that 3·8 per cent. of the gelatinous sputa found in public places in Colombo contained acid fast organisms which were presumably B. Tuberculosis.  
Mr. de Silva is to be congratulated on this excellent paper which describes a piece of devoted work).
7. “ Vibrios in Human Excrement ” by K. Vallipuram and W. R. de Silva.  
(This work was done during the examination of specimens from 1,180 persons who had been in contact with cholera patients.)

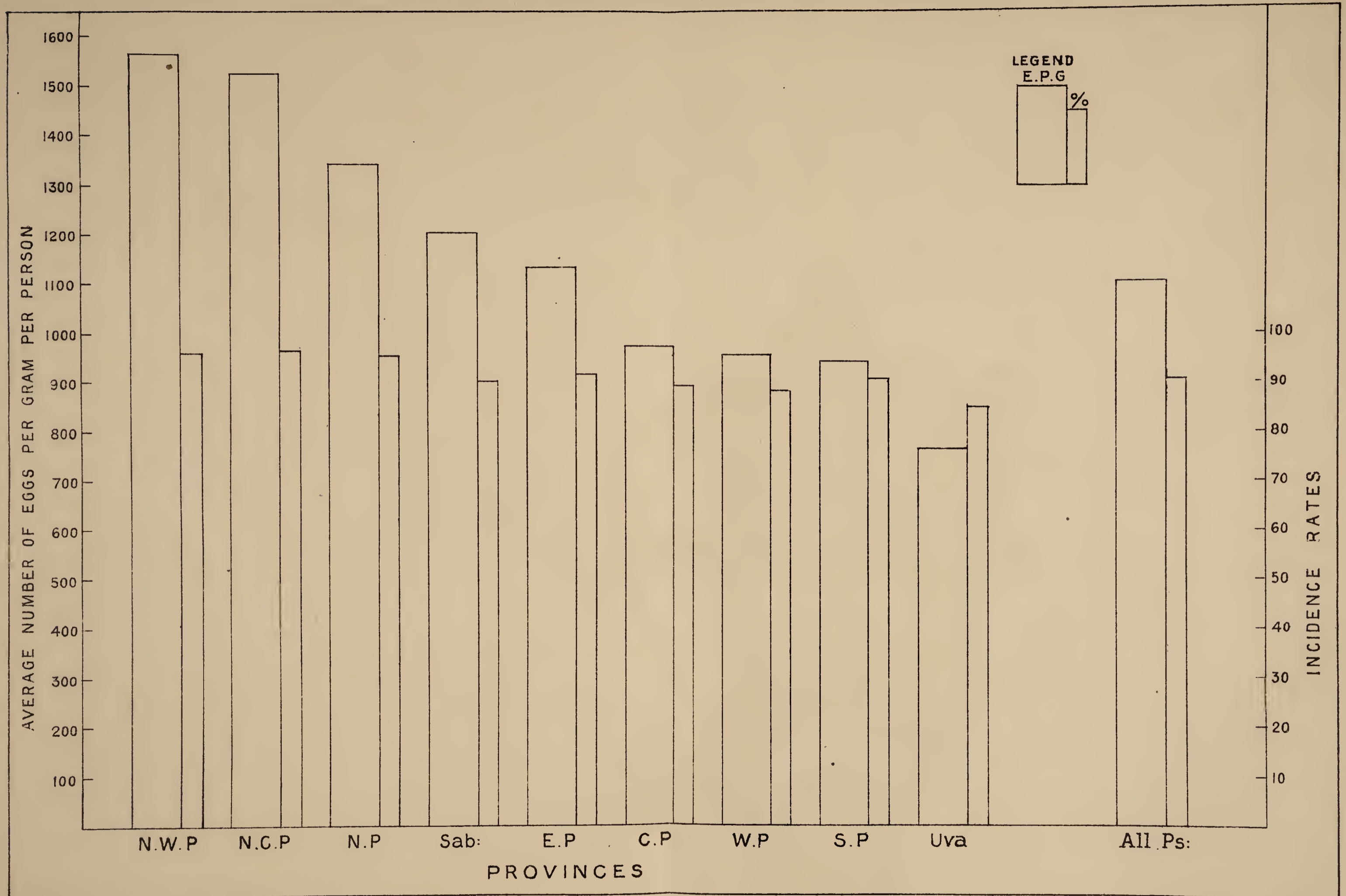
# LYON 1924-1925

person per province and for all provinces



# HOOKWORM SURVEY, CEYLON. 1924-1925.

Showing  
Average number of eggs per gram of feces per person per province and for all provinces;  
also incidence rates for each province and all provinces.

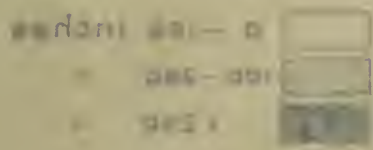


Numerator - Average eggs per gram per person.  
 Denominator - Incidence rate

# CEYLON

Annual Average Rainfall  
 up to 1922 inclusive

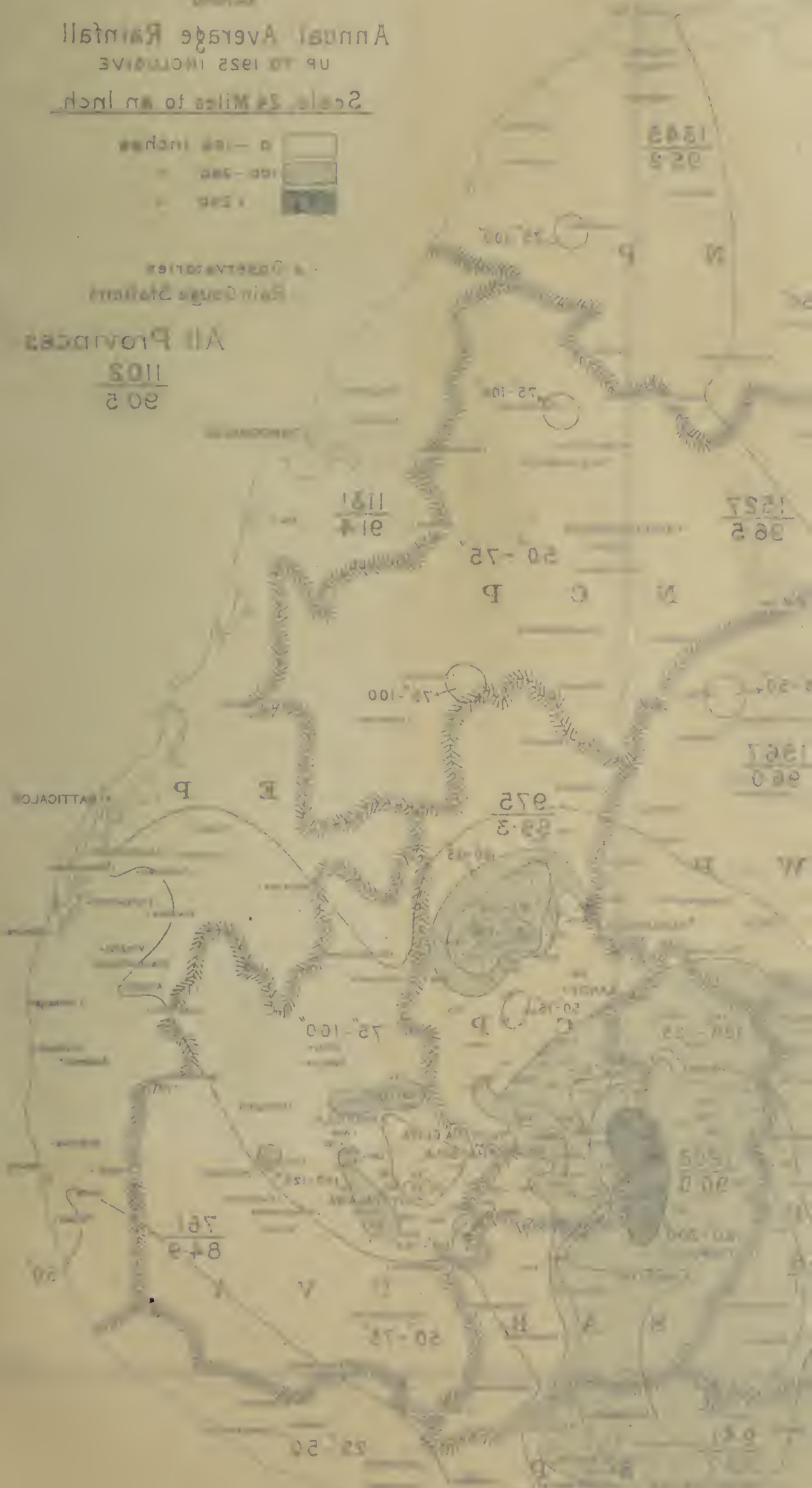
Scale 54 Miles to an Inch



Rain Gauge Stations  
 Observatories

All Provinces

$\frac{1102}{202}$



# Legend

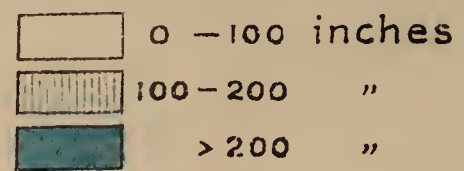
Numerator = Average eggs per gram per person.  
Denominator = Incidence rate

## CEYLON

SHOWING

Annual Average Rainfall  
UP TO 1925 INCLUSIVE

Scale, 24 Miles to an Inch.



Observatories.  
Rain Gauge Stations

All Provinces

1102  
90.5



During the year a travelling motor laboratory van was designed and constructed. This work was excellently done by Mr. Gray of the Government Factory. The laboratory van is required for investigations into outbreaks of disease. It will be especially useful for the investigation of "temporary carriers" in outbreaks of cholera. It will also be used for the examination of water supplies in distant parts of Ceylon and for the examination for infected mosquitoes. Mr. Carter has already made use of the van for this latter purpose.

B.—PASTEUR INSTITUTE.

The number of patients who were treated at the Pasteur Institute during 1925 was 510 (during 1924 398 patients were treated), there being an increase over the previous year of 112 patients.

Up to the end of 1924, 2,175 patients have received treatment, and 23 of these have died of hydrophobia, who were treated within one week of being bitten. These are considered to be failures. Therefore the percentage of failures has been 1·05 for all the patients treated.

The number of brains examined for rabies during the year 1925 was 126 (during 1924, 79 cases were examined). These included monkeys 2, dogs 117, cats 1, human 1, calf 1. Table I. shows the results of these examinations. Table II. shows the Provinces from which the patients came for treatment.

Table I.

District.	Positive.		Negative.		Unfit for Examination.		Total.
(1) Colombo	..	38	..	20	..	10	68
(2) Kandy ..	..	9	..	4	..	6	19
(3) Kalutara	..	10	..	—	..	3	13
(4) Ratnapura	..	1	..	—	..	4	5
(5) Matale ..	..	2	..	1	..	—	3
(6) Kurunegala	..	1	..	1	..	1	3
(7) Nuwara Eliya	..	1	..	2	..	—	3
(8) Galle ..	..	—	..	1	..	2	3
(9) Nawalapitiya	..	—	..	1	..	1	2
(10) Panadure	..	1	..	—	..	—	1
(11) Kegalla ..	..	1	..	—	..	—	1
(12) Avissawella	..	1	..	—	..	—	1
(13) Anuradhapura	..	1	..	—	..	—	1
(14) Matara ..	..	—	..	1	..	—	1
(15) Chilaw ..	..	—	..	—	..	1	1
(16) Jaffna ..	..	—	..	—	..	1	1
Grand Total ..	..	66	..	31	..	29	126

Table II.

Province.	Patients.	Province.	Patients.
Western ..	.. 332	North-Central	.. 1
Central ..	.. 67	Uva ..	.. 1
Sabaragamuwa	.. 42		510
Northern ..	.. 37		
North-Western	.. 19		
Southern ..	.. 11		

It will be noticed that more than half the brains were received from the Colombo District, and that more than half the patients came from the Western Province. Though jackals undoubtedly play a considerable part in maintaining the incidence of rabies in the less developed Provinces of Ceylon, this is not the case in those localities which supply the majority of the patients of the Pasteur Institute ; consequently much more might be done to lessen the incidence of rabies among dogs.

53. A Summary Report on the Results of a Hookworm Survey of the Island of Ceylon, May 17, 1924, to December 16, 1925, by Dr. W. C. Sweet, M.D., of the Rockefeller Foundation :—

Following a suggestion made by Dr. W. A. Sawyer of the International Health Board to Dr. J. F. Docherty at that time Director, Anchylostomiasis Campaigns, Ceylon, a hookworm survey of the Island of Ceylon was begun early in 1924. It was planned to examine specimens of faeces from representative groups of the population of each Province, with a view to gaining a conception of the intensity of hookworm infection in Ceylon. Such a conception, it was expected, would enable plans to be made for rapid and economical control methods, designed to cover the hookworm problem of Ceylon as a whole.

Survey work began in Jaffna on May 17, 1924, under the immediate control of Dr. D. S. de Simon. This officer continued in charge until June, 1924, when Dr. E. Jayatilleke became Director of the survey unit. The latter continued in this post until the survey was completed in Colombo on December 16, 1925. The staff of the survey unit, as a rule, consisted of five microscopists and three men who acted as dispensers and collectors of specimens. Laboratory work was done in convenient hospitals and dispensaries throughout the Island. When the survey was declared finished, 32,507 persons, representing every Province, had been examined. The thanks of the Anchylostomiasis Campaign are due to the Directors and staff of the survey unit and to the medical officers and apothecaries in charge of Government hospitals and dispensaries. The staff of the unit persevered in their work under many difficulties and completed the survey in spite of many obstacles of various kinds.

2. *Methods and Definitions.*—All faecal specimens were collected in quarter ounce tin containers and were examined by the Stoll method. This method was used as recommended by Stoll, with the modification that 0·1 cc of the solution was used for actual counting rather than the 0·15 cc advised by Stoll. He has recently stated in the International Health Board Bulletin for October, 1925, that the eggs in 0·075 cc of solution may be counted with a fair degree of accuracy, so it is not probable that the substitution of 0·1 for 0·15 cc made any significant difference in the accuracy of results.

The number of hookworm eggs counted in 0·1 cc of solution was multiplied by 150 to obtain the number of eggs per gram of faeces. At first two samples were counted from each specimen, but this was stopped later, as considerable time was consumed in these examinations, and one sample only was counted from the great majority of specimens.

All specimens, in which no hookworm eggs were found by the Stoll method, were examined by the Willis method and were recorded as infected or not infected. Persons not infected, then, were recorded as such only when no eggs were found by either the Willis or Stoll methods. Persons found infected by the Willis method only were included in the numbers of persons examined as having an egg-count of zero, as were those found to be not infected by both methods.

Certain terms used in this report are defined below. “Total egg-count” means the entire number of eggs actually counted for any group, multiplied by 150. It gives the number of eggs per gram of faeces for the entire group. “Average egg-count” or “eggs per gram” means the number of eggs per gram of faeces per person. It is obtained by dividing the total egg-count by the number of persons examined, including all persons not infected by Stoll’s method, but infected by the Wills method, and those not infected by either method, as a zero egg-count. “Intensity rate” means the eggs per gram found for any group, and “Infection rate” means the percentage of persons examined who were found infected with hookworms by the combination of examination methods used during the survey. “Hookworm rates” is a term used to cover both the intensity and infection rates.

From the work done previously and reported elsewhere, it seems probable that 25 is the best factor to use in reducing Ceylon egg-counts to female worm-counts. The approximate total number of worms represented by any given number of eggs per gram can be estimated by this formula : 
$$\frac{\text{eggs per gram} \times 25}{25}$$

For example, 1,000 eggs per gram would mean 40 female worms, or (40 × 2), 80 total worms, male and female.

3. *Hookworm Intensity and Infection Rates in Ceylon.*—Table 1 gives the results of examinations made during the survey of Ceylon. In this table the Island is divided into its nine Provinces, and hookworm rates are given for each Province :—

Table 1.—Hookworm Intensity and Infection Rates for the Provinces of Ceylon.

Province.	Number of Persons Examined.	Total Egg-count per gram of faeces.	Average Egg-count per gram per Person.	Number of Persons infected with Hookworms.	Percentage infected.
Northern ..	2,476	3,330,900	1,345	2,358	95·2
North-Central ..	1,301	1,986,600	1,527	1,255	96·5
North-Western..	3,408	5,340,300	1,567	3,271	96·0
Eastern ..	3,396	3,840,900	1,131	3,105	91·4
Uva ..	3,575	2,722,300	761	3,034	84·9
Central ..	7,363	7,178,400	975	6,577	89·3
Southern ..	3,207	3,017,500	941	2,908	90·7
Sabaragamuwa .	3,879	4,667,100	1,203	3,488	90·0
Western ..	3,902	3,732,100	956	3,437	88·1
All Provinces ..	32,507	35,816,100	1,102	29,433	90·5

There were 32,507 persons examined during this survey of Ceylon. This was approximately 0·7 per cent. of the population of the Island of Ceylon as given by the 1921 Census. The percentages examined in the various provinces varied between 1·8 in the Eastern Province and 0·3 in the Western Province. The persons examined were, as far as possible, unselected and represent fairly well, the general make up of the population. As in all surveys, it is possible that there was some tendency for more persons below the average in health to turn in specimens than did those in good physical condition, a tendency which would make for higher intensity and infection rates than would actually be found if everyone could be examined. It is probable, however, that the rates established by the survey can be safely applied to the general population.

The average intensity of hookworm infection for Ceylon is 1,102 eggs per gram of faeces per person, and the infection rate is 90·5 per cent. This is a lower intensity rate than might have been expected in a tropical country. It is undoubtedly a lower rate than would have been found by a survey made before 1916 when the Anchylostomiasis Campaign began its work and the efforts of the Medical Department to introduce sanitation were increased.

The highest intensity and infection rates in Ceylon are found in the dry zone, and there appears to be no correlation between rainfall and hookworm rates, with the possible exception of two provinces, Uva and Southern. In these two provinces there is some evidence of relation between rainfall and hookworm rates, but, as a general rule, the numerous tanks and the resultant irrigation have entirely changed the usual correlation. Other factors such as previous treatment for hookworm infection and sanitation have lowered the hookworm rates in some of the wetter provinces, but even without these factors, it is doubtful if the rates in these wet provinces would equal those found in the dry North-Central and North-Western Provinces.

These remarks apply only to the rates for provinces as a whole. There was a very considerable variation in the rates of adjacent villages and small areas into which it is not feasible to go into in a short report. The tables and discussions of the various provinces, which follow, are based on large divisions of these units, and no attempt is made to note variations between smaller areas within any province. Complete records of the survey are on file in the central office of the Anchylostomiasis Campaign.

NORTHERN PROVINCE.

There were 2,476 persons examined in the Northern Province, of whom none had been previously treated. This province may be divided geographically into the Jaffna peninsula, the main land, and Mannar island. Neither the intensity nor the infection rates varied significantly in these divisions, although there was some evidence that the people of the Jaffna area were very slightly more heavily infected. Table 2 gives the results of examinations made in the Northern Province.

Table 2.—Hookworm Intensity and Infection Rates for the Northern Province.

	Number of Persons Examined.	Total Egg-count per Gram of Faeces.	Average Egg-count per Gram of Faeces per Person.	Number of Persons infected with Hookworms.	Percentage infected.
Jaffna Peninsula ..	1,001	1,397,900	1,396	960	95·9
Main land ..	925	1,181,800	1,278	881	95·2
Mannar island ..	550	751,200	1,366	517	94·0
Northern Province ..	2,476	3,330,900	1,345	2,358	95·2

The Northern Province is in the dry zone of Ceylon, but has many shallow wells and tanks. Rainfall comes mainly during about three months of the year. The Jaffna peninsula is heavily populated, but the rest of the province is not. The living conditions and the habits of the people are favourable to the spread of hookworm infection and the concentrated rainfall, with irrigation, apparently supplies enough moisture to maintain fairly high intensity and infection rates. The Northern Province rates rank third in Ceylon.

NORTH-CENTRAL PROVINCE.

The North-Central Province is in the dry zone, but has many tanks. Most of the villages are close to tanks and small irrigation projects, many of them being just below the bunds of the tanks where the ground is more or less moist all the time. The greater part of the annual rainfall comes during the north-east monsoon. The province has the smallest population in Ceylon, and the people are scattered in small villages throughout the jungle. The hookworm intensity and infection rates are equal to those of the North-Western Province, and are the highest in the Island. Table 3 gives these rates for the North-Central Province.

Table 3.—Hookworm Intensity and Infection Rates for the North-Central Province.

		Number of Persons Examined.	Total Egg-count per Gram of Faeces.		Average Egg- count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
Anuradhapura area	..	960	.. 1,516,100	..	1,579	..	932	..	97·1
Kekirawa area	..	341	.. 470,500	..	1,380	..	323	..	94·7
North-Central Province	..	1,301	.. 1,986,600	..	1,527	..	1,255	..	96·5

There is a significant lowering of the hookworm rates in the Kekirawa district. The reason for this is not clear, and further studies should be undertaken. None of the persons examined in this province gave histories of previous treatment. It may be possible that the cultivation of rice is more common in the district called the Anuradhapura area than in the more southerly one, and that this explains the difference in rates. As will be demonstrated later, rice field workers, as a class, have the heaviest hookworm rates found in Ceylon.

NORTH-WESTERN PROVINCE.

The North-Western Province is also in the dry zone, but the southern part comes closer to the heavier rainfall areas of the Island. It is similar to the North-Central Province, but has a greater population and more towns, in distinction to small villages, than the province just considered. The concentrated rainfall and the presence of tanks probably explains the heavy infection found in this province and the North-Central.

Table 4.—Hookworm Intensity and Infection Rates in the North-Western Province.

		Number of Persons Examined.	Total Egg-count per Gram of Faeces.		Average Egg- count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
Northern area	..	1,455	.. 2,234,900	..	1,536	..	1,392	..	95·7
Southern area	..	1,953	.. 3,105,400	..	1,590	..	1,879	..	96·2
North-Western Province	..	3,408	.. 5,340,300	..	1,567	..	3,271	..	96·0

There is no difference in the hookworm rates for the two areas of this province. It might be possible that a division into coastal and interior areas would have been more significant, but the province was divided into northern and southern areas with rainfall in mind. None of the persons examined in this province gave histories of previous treatment for hookworm infection, so the rates are uninfluenced by this factor. Some of the towns of the province have night-soil disposal system, but the greater part of the population lives in unsanitated villages.

EASTERN PROVINCE.

The Eastern Province is a coastal area in the dry zone of Ceylon, probably not so well supplied with tanks and wells as the dry zone provinces already considered. The greater part of the people live in towns along the coast, the interior of the province being very sparsely populated. The largest town is Batticaloa. Table 5 gives the data as to hookworm rates for this province.

Table 5.—Hookworm Intensity and Infection Rates for the Eastern Province.

		Number of Persons Examined.	Total Egg-count per Gram of Faeces.		Average Egg- count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
Trincomalee area	..	965	.. 1,393,500	..	1,444	..	904	..	93·7
Batticaloa area	..	2,431	.. 2,447,400	..	1,007	..	2,201	..	90·5
Eastern Province	..	3,396	.. 3,840,900	..	1,131	..	3,105	..	91·4

The intensity and infection rates of the Trincomalee District are appreciably higher than those of the Batticaloa District. The cause of this variation in rates is obscure. The Batticaloa District has more acreage in rice and more people engaged in rice cultivation, and would seem to be the one that should have the higher rates. It may be that the Trincomalee District has more tanks and that a higher percentage of the persons examined there lived in villages around these tanks. Batticaloa has a night-soil disposal system, as has Trincomalee, and it may be that a large percentage of the examinations in the latter district were residents of Batticaloa. Further study should be undertaken to determine the significance of this difference in rates.

PROVINCE OF UVA.

A part of Province of Uva is on the eastern end of the main highlands of Ceylon and has an approximate average altitude of 3,500 feet above sea level. This part of the province is in the tea estates to a considerable extent and most of the persons examined from the highlands were Indian Tamil labourers on the estates. The rainfall of this area is lower than it is in the adjacent Central Province, but is higher than that found in the lowlands of Uva. This latter part of the province is in the dry zone, and has comparatively few tanks and rice fields. Table 6 gives the results of examinations made in the Province of Uva.

Table 6.—Hookworm Intensity and infection Rates in the Province of Uva.

	Number of Persons Examined.	Total Egg-count per Gram of Faeces.	Average Egg- count per Gram per Person.	Number of Persons infected with Hookworms.	Percentage infected.
Highlands ..	2,456 ..	1,676,400 ..	632 ..	2,026 ..	82·5
Lowlands ..	1,119 ..	1,045,900 ..	935 ..	1,008 ..	90·1
Province of Uva ..	3,575 ..	2,722,300 ..	761 ..	3,034 ..	84·9

Approximately 24 per cent. of the persons examined in the highlands area of Province of Uva reported a previous treatment, while only 7 per cent. of the persons examined in the lowlands gave this history. Even allowing for this fact the hookworm rates of the lowlands would still be appreciably higher than those of the highlands. This might be expected in view of the character of the country. The rates for the whole province are the lowest of any of the Ceylon provinces. This is almost surely due to the factors already mentioned, the altitude of part of the province, previous treatments, low rainfall, scarcity of irrigation in the lowlands, and sparsity of population. It is probable that coolies coming from India gave very few worms in this planting area, and that coolies transferred from other planting areas lose worms during their residence in Uva.

CENTRAL PROVINCE.

The Central Province is the most extensive planting district of Ceylon, so a majority of the persons examined were Tamil coolies working on estates. For the purpose of this report the province was divided according to rainfall. The Nuwara Eliya area has the highest rainfall, from about 100 to over 200 inches per annum, falling in both monsoons. The Kandy area has a lighter annual rainfall on the average, and the Dambulla area is in the dry zone. The first two areas are in the highlands, while the last is in the foothills adjacent to the Kekirawa area of the North-Central Province. Table 7 gives the results of examinations made in the Central Province.

Table 7.—Hookworm Intensity and Infection Rates in the Central Province.

	Number of Persons Examined.	Total Egg-count per Gram of Faeces.	Average Egg- count per Gram per Person.	Number of Persons Infected with Hookworms.	Percentage infected.	Percentage Previously Treated.
Nuwara Eliya area	5,150 ..	4,619,500 ..	897 ..	4,550 ..	90·8 ..	23·3
Kandy area ..	1,705 ..	1,827,500 ..	1,071 ..	1,549 ..	88·3 ..	22·1
Dambulla area ..	508 ..	731,400 ..	1,440 ..	478 ..	94·1 ..	0·0
Central Province ..	7,363 ..	7,178,400 ..	975 ..	6,577 ..	89·3 ..	21·4

The previous treatments given in the Kandy area were mainly given some years ago, while those of the Nuwara Eliya area were given more recently. It is probable that if a connection were made to this factor, the intensity and infection rates of the two areas would be the same. The high rates of the Dambulla area are the same as those found in the adjacent Kekirawa area of the North-Central Province and are due to the same causes. The rates for the Central Province, as a whole, are small when all conditions are considered and the rates for other provinces taken into account. This low rate is mainly due to the work of the Anchylostomiasis Campaign and to the improvement in sanitation which has taken place in parts of the province since 1916.

SOUTHERN PROVINCE.

The Southern Province of Ceylon is divisible into three areas :—(1) the Hambantota area, with a low rainfall and sparse population ; (2) the Matara area, an intermediate one ; and, (3) the Galle area, with a high rainfall and heavy population. The Matara area is more like the Galle area than the Hambantota area. None of the persons examined in this province gave histories of previous treatment. Table 8 gives the results of examinations made in the Southern Province.

Table 8.—Hookworm Intensity and Infection Rates in the Southern Province.

	Number of Persons Examined.	Total Egg-count per Gram of Faeces.	Average Egg- count per Gram per Person.	Number of Persons infected with Hookworms.	Percentage infected.
Hambantota area ..	908 ..	612,400 ..	674 ..	776 ..	85·5
Matara area ..	790 ..	789,000 ..	999 ..	731 ..	92·5
Galle area ..	1,509 ..	1,616,100 ..	1,071 ..	1,401 ..	92·8
Southern Province ..	3,207 ..	3,017,500 ..	941 ..	2,908 ..	90·7

The intensity and infection rates of the Matara and Galle areas are practically identical and are considerably higher than those of the Hambantota area. These rates are one of the few instances in Ceylon in which there is some correlation between rainfall and hookworm infection.

The dry zone of Ceylon can be divided into two parts :—(a) a northern and western part with high hookworm rates, highest in the North-Central and North-Western Provinces ; and (b) an eastern and southern area with lower hookworm rates, lowest in the Hambantota area of the Southern Province. The reasons for these differences are possibly connected with the amount of irrigation and numbers of tanks, but may have some relation to soil and other factors. Further studies would be of interest. It should be noted that the highest rates of the Hambantota area were found in Tissamaharama, a rice-growing community adjacent to a tank.

PROVINCE OF SABARAGAMUWA.

The Province of Sabaragamuwa is in the foothills of Ceylon. It has a high rainfall spread over both monsoons. To a considerable extent, the province is in plantations of rubber, interspersed with rice fields ; there are some tea estates and a considerable number of towns. Table 9 gives the results of examinations made in the Province of Sabaragamuwa.

Table 9.—Hookworm Intensity and Infection Rates of the Province of Sabaragamuwa.

		Number of Persons Examined.		Total Egg-count per Gram of Faeces.		Average Egg- count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
Kegalla area ..	..	2,057	..	2,472,200	..	1,202	..	1,866	..	90·7
Ratnapura area ..	..	1,822	..	2,194,900	..	1,204	..	1,622	..	89·0
Province of Sabaragamuwa ..	..	3,879	..	4,667,100	..	1,203	..	3,488	..	90·0

The Kegalla and Ratnapura areas are administrative districts of the Province of Sabaragamuwa. Conditions influencing hookworm infection are much the same in the two areas, and the intensity and infection rates are identical. The fact that this province has higher rates than the adjacent Central Province is probably largely due to the lower altitudes of the Province of Sabaragamuwa. The higher hookworm rates of the comparatively dry North-Western Province, also bordering on Sabaragamuwa, are an interesting commentary on the greater influence of tanks and irrigation than of rainfall on hookworm rates in Ceylon.

WESTERN PROVINCE.

The Western Province is the most heavily populated province of Ceylon. It has a heavy rainfall in the southern portion which shades off towards the north ; no part of the province, however, is considered to be in the dry zone. For this survey the province was divided into three areas. The Kalutara area is the southern one, has the highest rainfall and has a considerable acreage in rubber estates. The Colombo city area includes the city only. The Colombo-Negombo area, excluding the city, is the northern area, has a lower rainfall and fewer rubber estates. All up and down the coast are many towns and small coconut estates which are practically continuous. A considerable quantity of rice is grown throughout the province.

Sanitation has been carried farther in the Western Province than in any other, and most of the towns have a night soil disposal system of some kind ; many of the rural areas are also well sanitated and permanent sanitary inspectors are employed. A great deal of work has been done in this province by the Anchylostomiasis Campaign and by the Sanitary branch of the Medical and Sanitary Department. As far as possible areas of recent treatment were excluded from this survey, and none of the persons examined gave histories of previous treatment. Table 10 gives the results of examination made of residents of the Western Province.

Table 10.—Hookworm Intensity and Infection Rates of the Western Province.

		Number of Persons Examined.		Total Egg- count per Gram of Faeces.		Average Egg-count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
Kalutara area ..	..	1,273	..	1,466,200	..	1,152	..	1,196	..	94·0
Colombo city ..	..	1,243	..	720,400	..	579	..	992	..	79·8
Colombo-Negombo Area ..	..	1,386	..	1,545,500	..	1,115	..	1,249	..	90·1
(excluding city)										
Western Province ..	..	3,902	..	3,732,100	..	956	..	3,437	..	88·1

The effect of sanitation in lowering hookworm rates is well shown in the rates for the Western Province, a comparatively high rainfall area which would be expected to have rates similar to those of the neighbouring Province of Sabaragamuwa. It should be remembered that these rates for the Western Province represent untreated persons only. The persons examined in Colombo city included a considerable percentage of residents of slum areas and is fairly representative of the general population. The slight difference in rainfall between the Kalutara and Colombo Districts does not make any difference in the intensity rates ; there is some difference in the infection rates, a difference which may, or may not, be of significance:

4. *Influence of Previous Treatment on Hookworm Intensity and Infection Rates.*—In Uva, Central, and Sabaragamuwa Provinces, certain persons who gave histories of previous treatments for hookworm infection were examined. Table 11 gives a comparison between the hookworm rates of this group of previously treated persons and the rates of the persons examined in these three provinces who gave no such history. It should be noted that no attempt is made here to give any idea as to the dates of these treatments; these dates would range between 1916 and 1924. A fuller discussion of the relation between previous treatment and hookworm rates will be found in the paper on “Hookworm Re-infection,” published in the Ceylon Journal of Science—Medical Section, Vol. I., Part 3, November 18, 1925, pages 129 to 139.

Table 11.—Hookworm Intensity and Infection Rates in Relation to Histories of Previous Treatments.

		Number of Persons Examined.		Total Egg- count per Gram of Faeces.		Average Egg-count per Gram per Person.		Number of Persons infected with Hookworms.		Percentage infected.
History of previous treat- ment for hookworm infec- tion ..	..	2,369	..	1,389,500	..	586	..	1,953	..	82·4
No history of previous treatment ..	..	12,448	..	13,178,300	..	1,059	..	11,146	..	89·5
All persons ..	..	14,817	..	14,567,800	..	983	..	13,099	..	88·4

The effect of previous treatment on hookworm rates is well shown in Table 11. Both the intensity and infection rates are lower in the previously treated group, the intensity rate being comparatively lower than the infection rate. The effect of such treatments in producing the low rates of the Central Province previously discussed can be understood when this table is considered.

5. *Hookworm Intensity and Infection as influenced by Age and Sex.*—The 32,507 persons examined during the survey were classified by age and sex. Ages were divided into four children’s groups and three adult groups. The children fell into (a) a pre-school group, 2 to 6 years ; (b) two school-age groups, 7 to 10 and 11 to 14 years ; (c) a group of from 15 to 18 years during which the majority of children do not attend school. The adults were divided into one large group, between 19 and 40 years old, and two smaller groups, between 41, 50, and 51 years and over. All of the age groups were classified by sex. Table 12 gives the comparative rates resulting from this classification into age and sex.

Table 12.—Hookworm Intensity and Infection Rates for Ceylon as influenced by Age and Sex.

Age Groups.	Males.			Females.			Both Sexes.		
	Number of Persons examined.	Average Egg-count per Gram of Faeces per Person.	Percentage Infected with Hookworms.	Number of Persons examined.	Average Egg-count per Gram of Faeces per Person.	Percentage Infected with Hookworms.	Number of Persons examined.	Average Egg-count per Gram of Faeces per Person.	Percentage Infected with Hookworms.
2—6	1,782	792	76·4	1,427	703	74·3	3,209	753	75·5
7—10	3,971	1,188	93·0	2,225	1,136	93·2	6,196	1,169	93·1
11—14	3,475	1,184	93·1	1,379	1,159	93·8	4,854	1,177	93·3
15—18	2,041	1,247	93·1	1,179	1,171	94·1	3,220	1,219	93·5
19—40	7,766	1,093	90·4	4,875	1,100	92·1	12,641	1,096	91·0
41—50	1,154	1,046	90·3	520	1,117	90·8	1,674	1,074	90·4
51 years and over	542	1,227	93·2	171	1,117	96·5	713	1,215	93·9
All ages	20,731	1,117	90·5	11,776	1,075	90·6	32,507	1,102	90·5

The variations between the intensity rates are less than 200 eggs per gram of faeces in all age groups with the exception of the two to six years' group. This youngest group has a rate 753 eggs per gram which is significantly lower than those for the other age groups. The infection rates follow much the same course, except that the rates for the last three children's groups are somewhat higher than those for the first two adult groups. It would seem that the hookworm infection of Ceylon is acquired early in life, and that it maintains a fairly constant level through increasing years. There is some evidence that the height of infection is reached at the end of the children's groups and that the adult rates tend to be slightly lower.

The intensity rates for females parallel the rates for males, but are almost uniformly slightly below the male rates; the differences, however, are not large enough to be of any significance. The infection rates for the females are slightly above the male rates in all age groups except the first, a difference which may be of some significance.

Apparently the home is the centre for the spread of hookworm infection in Ceylon and the more confined the individual is to the home environment, the heavier will be the infection. This seems to be true for the majority, but exceptions will be noted under the discussion on occupations, where it is found that male cultivators have heavier rates than males in other occupations; this fact, however, if more carefully studied might prove to be a confirmation of the statement as to the home origin of Ceylon infections, rather than an exception to it. It seems probable that adequate rural home sanitation would eliminate practically all of the hookworm problem of Ceylon.

6. *Percentage of Infection with Hookworms in various Egg-count and Age Groups.*—The examinations made of residents of Sabaragamuwa and North-Western Provinces were classified by the numbers of people in (1) a not infected group; (2) a group found infected with hookworms by the Willis method, but not by the Stoll method; (3) seven groupings of egg-counts per gram. All these groupings were further subdivided by age groups. The original figures gave data also as to sex, but since no significant variations were found between males and females, this classification was omitted from the discussion. Table 13 gives the number of persons and percentage of the total number in nine egg-count groups for all the examined residents of the two provinces mentioned.

Table 13.—Percentage of Persons in Various Egg-count Groups by Age, Sabaragamuwa and North-Western Provinces.\*

Age Groups.	Total Number Persons in Age Group.	Not Infected with Hookworms.		Infected by Willis not by Stoll.		1-299 Eggs per Gram.		300-449 Eggs per Gram.		450-899 Eggs per Gram.		900-1,349 Eggs per Gram.		1,350-2,699 Eggs per Gram.		2,700-5,399 Eggs per Gram.		5400 Egg-per Gram and up.	
		No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.	No. of Persons.	Percentage of Total.
2—6	765	172	22·0	37	5·0	64	8·0	79	10·0	156	20·0	87	11·0	115	15·0	38	5·0	17	2·0
7—10	1,523	68	4·0	69	4·0	73	5·0	141	9·0	354	23·0	234	15·0	393	26·0	138	9·0	53	3·0
11—14	1,072	47	4·0	45	4·0	52	5·0	79	7·0	248	23·0	192	18·0	254	25·0	114	11·0	31	3·0
15—18	667	42	6·0	39	6·0	30	4·0	51	8·0	118	18·0	111	17·0	177	27·0	78	11·0	21	3·0
19—40	2,591	149	6·0	113	4·0	151	6·0	206	8·0	545	21·0	425	16·0	668	26·0	257	10·0	77	3·0
41—50	365	21	6·0	16	4·0	19	5·0	27	7·0	79	22·0	52	14·0	100	27·0	37	10·0	14	4·0
51 and over	177	8	4·0	8	4·0	7	4·0	19	11·0	40	23·0	23	13·0	54	30·0	9	5·0	9	5·0
All Ages	7,160	307	7·0	327	4·0	396	6·0	602	8·0	1,540	21·0	1,124	16·0	1,771	25·0	671	9·0	222	3·0

\* The percentages of this table are figured to the nearest whole number only.

In the youngest age group, two to six years, the highest percentage of persons is found in the "not infected" group, with the 450 to 899 eggs per gram group a close second. The seven-to ten-year group, however, gives practically the adult distribution, with some slight tendency to a shift of the value of percentages to the left. This is also true of the over fifty years group which had practically the same distribution as the seven-to ten-year group. The four age groupings between the eleventh and fiftieth years have almost identical distributions. Here again, as noted in the preceding pages, the adult hookworm rate is attained by the second children's group.

There is a curious uniformity in the distribution of infection throughout the age groups. The highest percentage is found in the 1,350–2,699 eggs per gram group in all ages, except those between two to six. The 450–899 eggs per gram group holds second place in all ages, while the 900–1,349 eggs per gram group is third, except in the two to six years group where it is fourth. The 2,700–5,399 eggs per gram group is fourth between the ages of eleven and fifty, but the 300–499 eggs per gram group holds this place between seven and ten years and in those over fifty.

The distribution of infection for all ages may be ranked as follows:—(1) 1,350–2,699 eggs per gram; (2) 450–899 eggs per gram; (3) 900–1,349 eggs per gram; (4) 2,700–5,399 eggs per gram; (5) 300–449 eggs per gram, &c. Approximately one quarter of the population has a count between 1,350 and 2,699 eggs per gram of faeces. Similar classifications for the other provinces, for occupations, races, &c., would prove of interest.

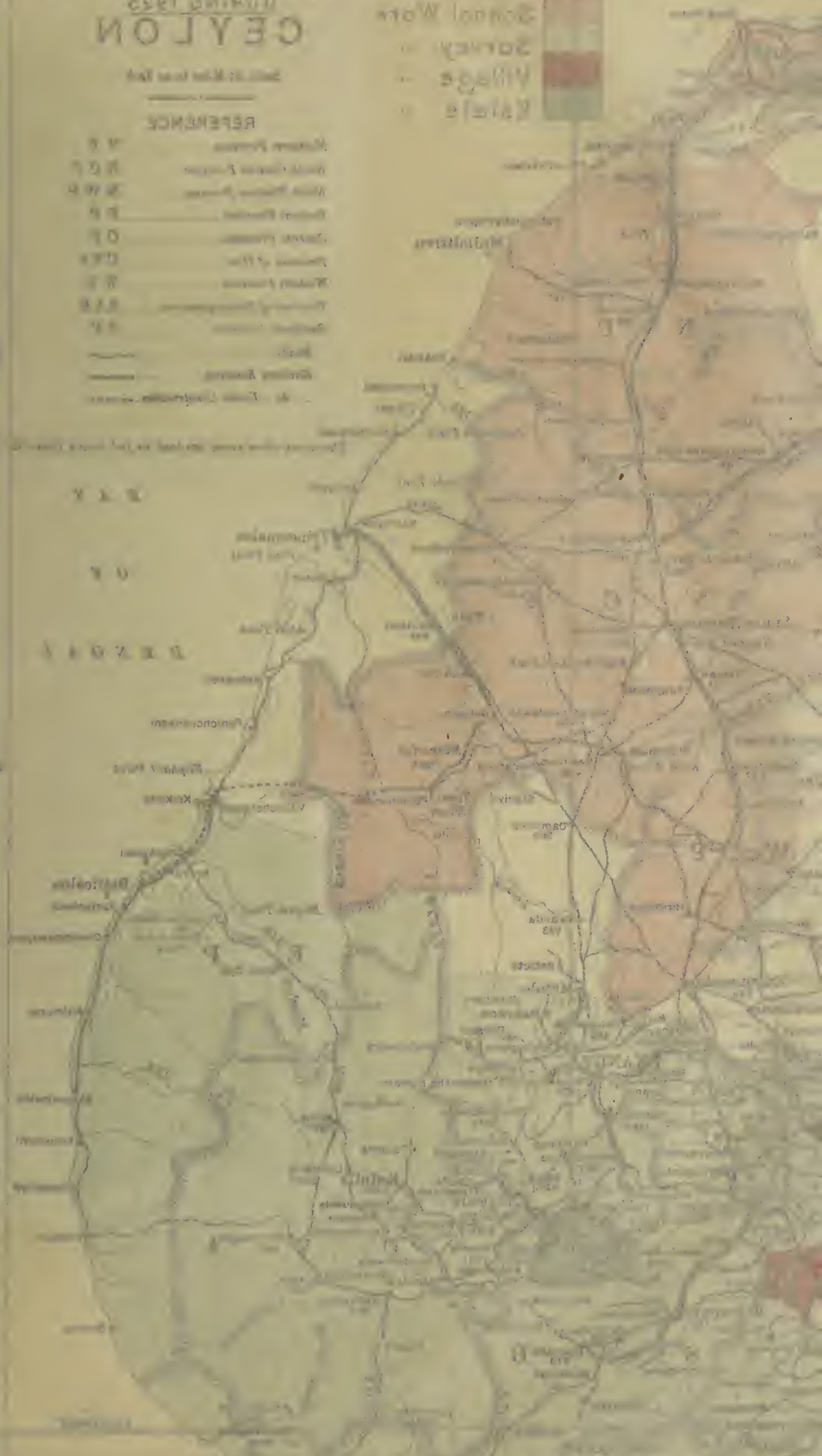
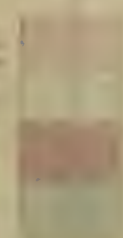
# REPORT OF ACTIVITIES DURING 1933 CEYLON

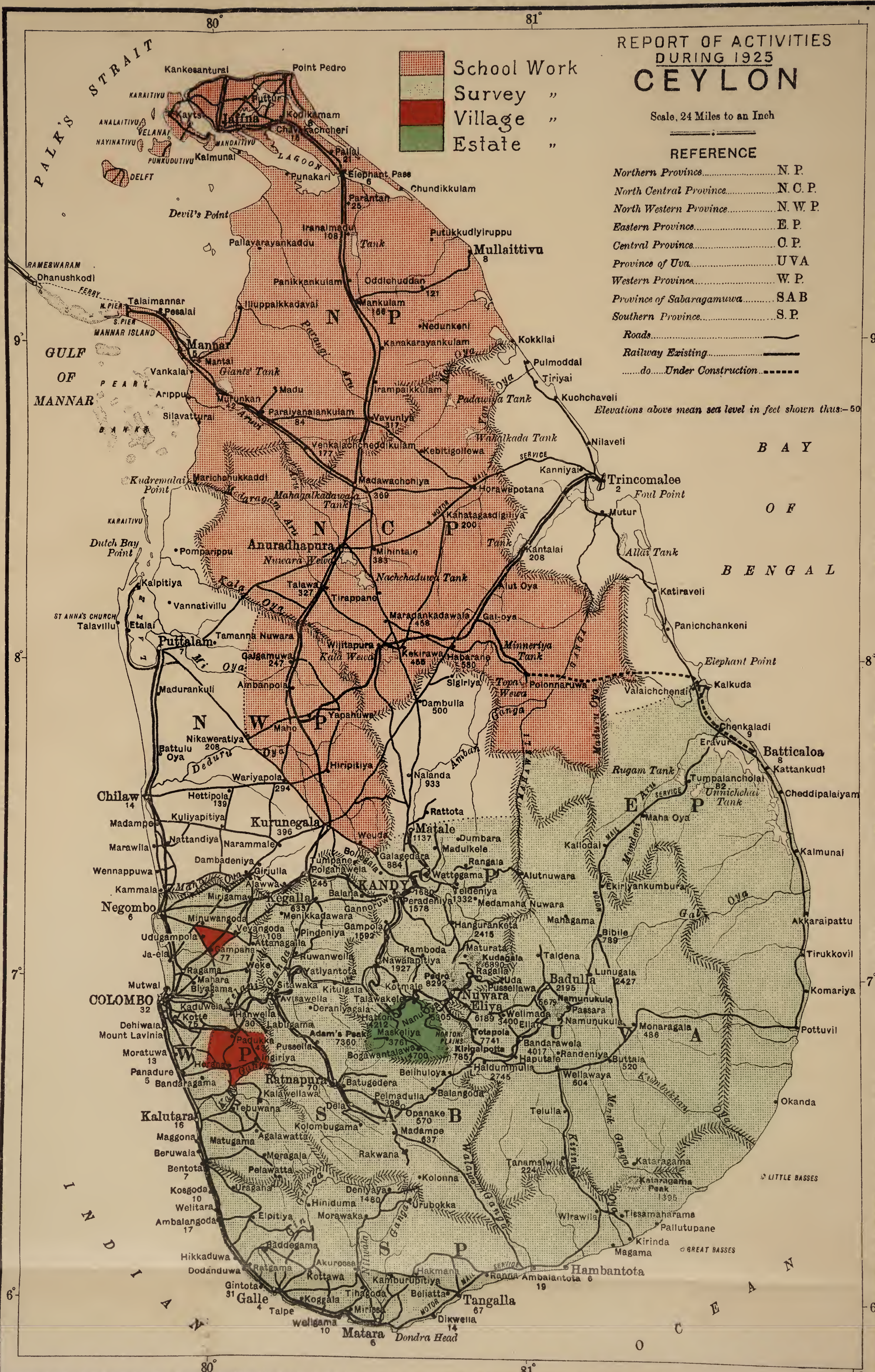
Small Scale Map

## REFERENCE

1. 1933	General Survey
2. 1933	General Survey
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16. 1933	General Survey
17. 1933	General Survey
18. 1933	General Survey
19. 1933	General Survey
20. 1933	General Survey

General Work  
Survey  
Village  
Rural





REPORT OF ACTIVITIES  
DURING 1925  
**CEYLON**

Scale, 24 Miles to an Inch

REFERENCE

Northern Province.....	N. P.
North Central Province.....	N. C. P.
North Western Province.....	N. W. P.
Eastern Province.....	E. P.
Central Province.....	C. P.
Province of Uva.....	UVA
Western Province.....	W. P.
Province of Sabaragamuwa.....	SAB
Southern Province.....	S. P.

Roads.....  
Railway Existing.....  
.....do..... Under Construction.....

Elevations above mean sea level in feet shown thus:—50

7. *Hookworm Intensity and Infection Rates as influenced by Occupation.*—The examinations made in the Province of Sabaragamuwa and in about half of the North-Western Province were classified as to occupations represented. Divisions were made into (a) children of both sexes from 2 to 14 years of age ; (b) males only from 15 years and up, and (c) females from 15 years up. This gave a class of males actually engaged in the occupations stated. Cultivators included all engaged in rural agricultural pursuits ; traders, all shop-keepers, and town dwellers in general ; professional, included doctors, lawyers, &c., mainly a class who wore shoes at least part of the time. Coolies included all government and estate labourers, mainly Indian Tamils. The 15 persons listed as giving no occupation were those from whom information was not collected ; they are obviously of various classes since they combine a high intensity with a low infection rate. Table 14 gives the hookworm infection and intensity rates as influenced by occupation.

Table 14.—Hookworm Intensity and Infection Rates as influenced by Occupation ; Southern and part of North-Western Provinces.

		Number of Persons Examined.	Total Egg- count per Gram of Faeces.	Average Egg-count per Gram of Faeces per Person.	Number of Persons infected with Hookworms.	Percent infected.
Two to 14 years, males and females	..	2,537	.. 3,240,200	.. 1,277	.. 2,299	.. 90·6
Males only, 15 years and up. Coolies	..	931	.. 1,378,800	.. 1,481	.. 867	.. 93·1
Traders	..	366	.. 419,700	.. 1,147	.. 327	.. 89·3
Cultivators	..	293	.. 534,400	.. 1,824	.. 289	.. 98·6
Students	..	111	.. 124,300	.. 1,120	.. 101	.. 91·0
Professional	..	73	.. 66,900	.. 916	.. 53	.. 72·6
Fishers	..	33	.. 39,500	.. 1,197	.. 28	.. 84·8
No occupation given	..	15	.. 27,900	.. 1,860	.. 12	.. 80·0
All Occupation	..	1,822	.. 2,591,500	.. 1,422	.. 1,677	.. 92·0
Females 15 years and up	..	1,166	.. 1,649,100	.. 1,420	.. 1,114	.. 95·9
Grand Total	..	5,526	7,480,800	1,354	5,090	92·1

The hookworm intensity rate of the children under fourteen of both sexes is 1,277 eggs per gram. This is a rate with a barely significant variation from that for the males and females of the remainder of the table, 1,420 eggs per gram. The relation between children's and adults' intensity rates is discussed in a preceding section. The average intensity rates for adult males and females are the same, but there is a great greater infection rate in the female than in the male group.

The infection and intensity rates of the male coolies are about the average of the total population. These coolies probably come from India with lighter rates than those found in Ceylon and their habits, occupation and living conditions do not tend to increase their rates much above the average for their Sinhalese neighbours. The average rates, however, probably represent a greater change from children's rates in the Tamils than in the Sinhalese.

The traders, largely townsfolk living under attempts at sanitation of varying success, would be expected to have somewhat lower rates than the total population. This is found to be so, as their rates are 1,147 eggs per gram, and 89·3 per cent., as against 1,354 and 92·1 respectively for the general average ; this is a variation of some significance.

The high intensity and infection rates of the male cultivators correspond to findings in other countries. If the soil infection with hookworm larvae is largely a matter in Ceylon of household pollution, as would seem to be the case from the rapidity with which children's intensity and infection rates increase, it is somewhat difficult to explain why adult male cultivators should have higher rates than coolies, for instance, both living in approximately the same sanitary conditions. The explanation may be found in the situation of the homes, since practically no night soil is used for fertilizer in Ceylon. The cultivators' home, notably so in the case of rice and coconut cultivators, may be in moister places than are the general run of homes ; if this is true, cultivators' children should have higher rates than other children, a point which should be determined. Variations of soil upon which the homes are built should also be considered. It seems probable, from classifications made of examinations in the Galle and Matara Districts of the Southern Province, that the increase in rates for cultivators is largely due to the inclusion of rice field workers. Table 15 gives rates for certain types of cultivators and for the general population in these two districts of the Southern Province.

Table 15.—Hookworm Intensity Rates in certain Agricultural Occupations ; Galle and Matara Districts, Southern Province.

	Numbers of Persons examined.	Total Egg-count per Gram of Faeces.	Average Egg-count per Gram of Faeces per Person.
Male adults engaged solely on. Rice field work	.. 175	.. 242,800	.. 1,387
Tea estate work	.. 100	.. 118,600	.. 1,186
Coconut estate work	.. 100	.. 98,800	.. 988
Rubber estate work	.. 100	.. 93,300	.. 933
General population	.. 2,299	.. 24,051	.. 1,046

In these two districts of the Southern Province the intensity rate for male adult rice-field workers is notably higher than the rate for the general population. The rates for workers on tea, coconut, and rubber estates do not vary sufficiently from the general rates to be of much significance. It should be noted that the "cultivators" of table 14 were mainly rice field and coconut estate workers, since the labourers on tea and rubber estates are mostly Tamil coolies and would be included under the class of "coolies" in that table. These classes of workers do not vary significantly from the general average in either the Southern Province or the Provinces represented in Table 14. If the rates for workers in rice fields and on coconut estates in the Southern Province are combined, the rate becomes 1,242 eggs per gram ; this is an increase of approximately 20·0 per cent. over the general rates. The "cultivators" of Table 14 have rates which are an increase of about 33·0 per cent. over the general average. It seems probable that male adult cultivators in Ceylon have intensity rates approximating an increase of 30·0 per cent. over the rates for the entire population, an increase which is to be found entirely in the rice field workers, on account of causes not adequately determined. If the general intensity rate for the population of Ceylon is 1,102 eggs per gram as stated in Table 1, the average rate for male adult rice field workers is about 1,450 eggs per gram. The rice field workers have much the heaviest intensity and infection rates in Ceylon.

The male students over 15 and the professional class of Table 14 have rates below the general average. Both of these classes wear shoes part of the time, at least, and would be expected to have lower rates. The students, being younger, have not had sufficient time to lose a very significant amount of their infection.

Only 33 fishers were included in this classification, so the figures are not of much value. These people would be expected to have lower intensity and infection rates than obtain in other occupations, since most of them live on a sandy seashore, washed by salt water, where the soil is unfavourable to the development of hookworm larvae.

The intensity rate for all the people considered in Table 14 is 1,354 eggs per gram and the infection rate 92·1 per cent.

These rates are established with about equal influence by the children's adult male and adult female groups.

8. *Hookworm Intensity and Infection Rates as Influenced by Race.*—Information as to the race of the person submitting faecal specimens was obtained during the course of the surveys. Some of this information for residents of the Eastern and part of the Southern Provinces was classified with interesting results. Table 16 gives the hookworm infection and intensity rates as influenced by race in the area just mentioned. It seems probable that the same relative rates obtain in other parts of the Island. This particular area was chosen for immediate classification and it seemed more likely to yield a significant number of persons in each race than other areas.

Table 16.—Hookworm Intensity and Infection Rates as Influenced by Race ; Eastern and part of Southern Provinces.

Race.	Number of Persons examined.	Total Egg- count per Gram of Faeces.	Average Egg- count per Gram of Faeces per Person.	Number of Persons infected with Hookworms.	Percentage infected.
Sinhalese	3,011	2,808,900	933	2,701	89·7
Ceylon Tamils	1,482	1,419,900	958	1,345	90·7
Indian Tamils	554	575,100	1,038	515	93·0
Moors	541	657,900	1,216	509	94·1
Veddahs	115	81,500	708	98	85·2
Malays	23	12,100	526	19	82·6
Burghers	13	11,400	877	11	84·6
All Races	5,739	5,566,800	970	5,198	90·6

The number of Malays and Burghers examined were too small to make the results of any significance. On theoretical grounds, it would be expected that the Malay infection and intensity rates would be at the general level, or possibly somewhat about it, when their habits and living conditions are considered. The Burghers would be expected to be below the general rates as they are at least a partially shoe-wearing race.

There is no significant difference between the Sinhalese, Ceylon Tamils, and Indian Tamils when their intensity rates alone are considered. The infection rate of the Indian Tamils is above that for the other two groups, but probably not enough so to be of any special significance.

The only really significant changes from general rates are found in the Moors and Veddahs, the former being above the average and the latter below it. The Moors are the only race which maintain a more or less of a harem ; it is frequently necessary to obtain the services of a female dispenser to get Moorish women treated. The sanitary conditions of these homes are described as being distinctly bad and of such a nature as would lead to heavy hookworm infection. This apparently results in the increase in rates found in this race.

There is some question as to whether there are any real Veddahs left. The persons here listed as Veddahs live in a very dry part of the Eastern Province in which there is little, if any, irrigation. They have, at least, true Veddah parents or grandparents and are probably less agricultural and more nomadic than the Sinhalese with whom they have intermarried. There is little traffic with more heavily infected parts of the province. The considerably lowered rates of these Veddahs could be expected on theoretical grounds.

9. *Summary and Recommendations.*—Hookworm infection is widespread in Ceylon varying from an infection rate of 84·9 per cent. of the residents of the Province of Uva to 96·5 per cent. of the population of the North-Central Province.

The intensity of hookworm infection in Ceylon is low for a tropical country ; 1,102 eggs per gram of faeces per person as an average for the Island.

There is no marked correlation between rainfall and hookworm rates in Ceylon, the heaviest provincial intensity and infection rates being found in the northern and western dry zones ; these rates for all the dry zone provinces are higher than the corresponding rates for the provinces in the wet zone. This fact is probably explained by the presence of numerous tanks in the dry zone and the custom of living on or near the bunds of these tanks. More widespread sanitary measures and the altitude of part of the wet zone area may help to explain the lower rates of the provinces with the higher rainfall.

Hookworm infection is acquired early in life in Ceylon and the intensity and infection rates of children between 7 and 18 years of age are practically identical with, if not slightly higher than the adult rates. It seems very probable that the home and its immediate surroundings are the *foci* of the heaviest soil pollution, and the immediate source of practically all of the hookworm infection of the Island.

The rice field workers of Ceylon, as a class, have the heaviest intensity and infection rates, averaging about 30·0 per cent. above the rates for the general population. This is not accounted for by the use of night-soil as fertilizer, a custom which is not at all prevalent in Ceylon, but must be related to the situation of the home or the character of the soil.

The Moors, as a race, have the highest hookworm rates in Ceylon, almost surely related to the custom of secluding Moorish women and the consequent soil pollution ; this pollution would be greater than that found in the freer Sinhalese and Tamil homes.

In view of the comparatively light hookworm rates of the Western and Southern Provinces, intensity village work, now being carried on and planned for the future seems hardly justified. There is more basis in hookworm rates for such work in the North-Central and North-Western Provinces, but there village work would not be economically feasible. It seems probable that for the present the treatment of all patients at Government hospitals and dispensaries whose physical condition makes this possible, will be adequate as a control measure for the general population. To be effective this work must be carefully supervised and efforts must be made to treat every possible person.

Since the school children are comparatively heavily infected and are a part of the general population which it is fairly easy to reach, it would seem wise to organize work so that every school child in Ceylon can be treated at least once in 18 months. Along with this school work should go a consistently maintained effort to instruct school children and available adults in the rudiments of sanitation and the prevention of hookworm infection. It should be noted that future surveys can obtain an adequate estimate of the intensity and infection rates of the general population by examining the school children only.

Estate labourers, while not any more heavily infected as a class than other classes in Ceylon, form a more or less controlled group and should be reached by periodic treatment and sanitation propaganda.

The conclusion that rural sanitation is the key to the permanent control of the hookworm problem in Ceylon is forced by the facts brought out in this report. The institution of rural health units would be a solution of many of the public health questions of the Island, and would also be a great step in advance for the control of hookworm infection. As these units increased in numbers and efficiency, organized anchylostomiasis work could be turned over to them, and separate organization for hookworm control be abandoned.

54. Summary of Research work done in the City Microbiological Laboratory, 1925, by Dr. L. Fabian Hirst, City Microbiologist, Colombo :—

*Plague.*—The completion of the series of investigations into the parasitology of plague in Colombo, and the analysis of comparative data obtained from all parts of the world was the main task of the year under review. The report will take up two numbers of the Ceylon Journal of Science, Part I., dealing with the experimental and entomological aspects of the subject is in the press. Part II. on Epidemiology will be completed and published on receipt of further information regarding the flea surveys now in progress in India. As this Journal is the official scientific organ for the Colony, and is published in Colombo, it is felt to be a work of supererogation to enter into any further discussion of the findings here.

During 1925 plague preventive measures were concentrated on the cheopis zones marked out by the rat flea survey of Colombo 1922-1924.

Batteries of Clayton machines in charge of cleansing, disinfecting and rat destroying gangs were operated from without inwards throughout each zone during the off plague season.

Since these measures were carried out only 25 cases of human and 5 cases of rat plague have been detected in Colombo up to the end of 1925.

*Hookworm Disease.*—The investigations into hookworm disease in relation to sewage disposal begun in 1921 were renewed during the last quarter of this year. It has not been necessary to apply for any further grant in aid from the International Health Board. Rapid progress is being made, especially with the new survey of the incidence of hookworm disease in Colombo. New apparatus and more refined methods are being employed with a view to obtaining an accurate estimate of the average egg output in different parts of the city.

I hope to report the general results next year. Cases of occupational hookworm infection among drainage works employees still continue to occur from time to time. I am endeavouring to discover the precise situation to which the infective hookworm larvae develop.

*Water Supplies.*—The experiments at Labugama reservoir on the treatment of the water supply have been recently renewed. They were interrupted during the raising of the dam and the installation of the additional filters.

The raising of the spill level of the reservoir will do much to improve the average quality of the water supply. Nothing is clearer from the results of observations already carried out than the fact that the degree of aeration, iron content, colour, amount of suspended matter, taste, odour, and number of micro-organisms, including both iron bacteria and lactose fermenters, increase with the depth below the surface. The rate of increase is particularly rapid between the 5th and 15th feet.

The best level for drawing off the water is about 18 inches, beneath the surface.

The principal difficulty in applying the successful results of earlier laboratory experiments in actual practice is the limited space available for additional treatment works. It is a question of working out the most efficient and economical modification of the existing plant to achieve the ends in view, viz., the further reduction of the rate of incrustation of the water mains of the suspended matter detached from this incrustation, of excess of iron, of acidity with the associated plumbo-solvency, and of removing the taste and odour liable to develop when the reservoir is exceptionally low.

It would appear from the results of the experiments already carried out that a complete set of aerating scrubbing filters for the treatment of the whole supply could not be accommodated on the side of the valley where the treatment works are situated.

This is unfortunate as the experimental coke and coral scrubber erected over the settling tank has given excellent results.

I hope to complete my share of the investigation of alternative plans of treatment during the current year.

Research is in progress on the bacteriological effect of the discharge of the effluent from the Madampitiya sewage treatment works on the Kelani river. There can be little doubt that several cases of enteric occurring in houses on the Colombo bank of the river must be attributed to bathing in the sewage polluted river water at a spot 550 yards below the outfall. On investigation it was found that under certain states of river and tide a well-defined stream of effluent is driven down the near bank of the river, eventually mingling with the general body of diluent water at the river bend some 600 to 800 yards from the point of discharge which is situated on the river bank itself.

55. Notes on interesting cases treated during 1925 in the Lady Havelock hospital, Colombo, by Dr. Catherine E. Anderson, F.R.C.S. (Edin.), Medical Officer in charge Lady Havelock Hospital for women, and Lady Ridgeway Hospital for children, Colombo :—

#### RUPTURED OVARIAN PREGNANCY.

A. H. : Singhalese, aged twenty-five years, admitted January 7, 1925.

*History* : Abdominal pain for two days, Amenorrhoea for two months, bleeding p.v. for four days, two weeks ago.

*On Admission* : Pulse was 140 per minute; temperature was 98.4° F.

The abdomen was distended and rigid especially in the lower part. Immediate laparotomy was performed through median umbilico pubic line. The abdominal cavity was full of blood, and a 6 weeks' embryo was found free inside it. A large haemorrhagic mass was found in Douglas' pouch attached to posterior surface of right broad ligament. It was found to consist of the right ovary with ruptured cyst-wall attached to it. The right tube was congested, but otherwise normal. The right ovary with attached cyst-wall was removed. As condition of the patient was so bad, half pint of saline was given intra-venously as soon as abdomen was saturated up.

After treatment—Salines with glucose were given continuously per rectum—Hypodermic injections of Pituitrin 1 cc. and Adrenalin gr. 1/100 were given. Injections of Eserine and Strychnine were given 4 hourly. Patient was treated for anaemia with iron and Haemoglobin later on.

Patient made an uninterrupted recovery and was discharged on February 4, 1925.

#### ILIO-COLIC INTUSSUSCEPTION IN AN ADULT.

J. : Singhalese, aged 25 years, admitted January 15, 1925.

*History* : Patient complained of having spasms of abdominal pain 3 or 4 times daily during the last 6 weeks. Her bowels were regular, but she gave a history of blood and mucus in stools for the last 6 weeks, and occasional vomiting after feeds.

*Obstetric History* : Patient was married and had one child 1½ years ago.

*On Admission* : A hard mass was found lying transversely midway between the umbilicus and the xyphoid cartilage about 6 or 7 inches in length and about 1½ inches in width. It was slightly movable and tender. The rest of the abdomen was soft. She had slight attacks of pain, but they were not severe. There was a tympanitic note between the mass and the liver. As worms were suspected, oil of Chenopodium was given along with mag. sulph. on January 16, 1925. She passed no worms. The pain in the abdomen was less, but there was always a sense of dull ache. Bowels well moved, showed nothing abnormal. Laparotomy done on January 20, 1925, through right rectus above level of umbilicus. The mass was found to be an ilio-colic intussusception, which was reduced with not much difficulty. The last 4 inches of ilium, the caecum, the appendix and ascending colon were invaginated into transverse colon.

After treatment injections of eserine and strychnine were given 4 hourly. An enema was given the following day. Salines with glucose were given per rectum. Except for a haematoma in lower part of abdominal incision the patient made an uninterrupted recovery, and was discharged well on February 19, 1925.

#### SPLENECTOMY.

M. : Sinhalese, aged 18 years, admitted April 2, 1925.

*History* : Patient was unmarried, residing in Kalavana (35 miles from Anuradhapura), and suffering from intermittent fever and a tumour of abdomen for 1 year.

*On Admission* : Pulse was 110 per minute and temperature was 99·4° F. Patient was emaciated, and gave a history of 8 months amenorrhoea. The spleen was enlarged extending to midway between umbilicus and pubis, and on the right side to within 2 inches of the right anterior superior spine. Heart sounds showed haemic murmurs at the pulmonary area. She complained of great discomfort in the abdomen and was most anxious to have the tumour removed. As her condition was bad operation was deferred till it improved. She was put on a mixture of iron-arsenic and quinine, and daily injections of Gr. X quinine were given for 12 days. She was treated for Anchylostomiasis with oil of Chenopodium and carbon tetrachloride during that period. She ran a low temperature varying between 101·4° F to 97° F, rising every evening and falling every morning. This continued till May 7, *i.e.* 35 days, when the evening temperature did not rise higher than 99° F. During the whole of this period she complained of pain over the spleen and was constantly crying out for an operation. As her condition was much improved, although she was still very anaemic, splenectomy was done on May 14, 1925. The spleen was easily removed through a left rectal incision, there being no adhesions at all. At the upper pole of the spleen there was a large infarction (3" by 2"), and in the centre of the organ there was a smaller one. The spleen weighed 3 lb. 12 oz. The temperature went up to 100·8° F on the night of operation, and swung a little for the first 4 days and then settled down to normal. After the operation the patient developed a cough, and on the 12th day the lower end of the wound burst open and the omentum was protruding. Chloroform was given and the abdominal wall was re-saturated. For 5 successive days the patient had a rigor every evening with the temperature going as high as 104·2° F on the 4th day, and below normal by morning. Injection of quinine Gr. X. started again and continued for 6 days. On the 8th day after second operation temperature was normal, never going above 98·4° F and continued so. Abdominal wound healed by first intention. Patient was feeling very well and was eating curry and rice and drinking any amount of milk. The temperature never rose above normal after June 1. Patient was discharged 36 days after splenectomy on June 20, 1925, feeling very well.

#### SPLENECTOMY.

H. H. : Sinhalese, 18 years old, admitted September 12, 1925.

*History* : Patient not married and had never menstruated. She had always resided in Tissamaharama. She was admitted with a large abdominal tumour and a history of fever for the last 3 years.

*On Admission* : Spleen was enlarged filling up the left side of abdomen and extending to just beyond umbilicus. It was slightly mobile. Pulse was 80 per minute, and temperature was 98·4° F.

Patient was very anaemic (Hb. 50 per cent.) and the heart showed haemic murmurs. Blood films were sent to the Bacteriological Institute, but returned negative for malarial parasites. The patient was treated with oil of Chenopodium and Carbon Tetrachloride and iron and her haemoglobin percentage was brought up to 70 per cent.

Operation performed on September 24, 1925. Splenectomy was done without much difficulty. There were a few adhesions of the upper pole to the diaphragm. Spleen weighed 3 lb. 7 oz. The temperature on the evening of operation was 102·4 F. and the pulse was 116 per minute. Both the temperature and the pulse came down to normal the next day and remained so all the time. Patient made an uneventful recovery. The abdominal wound which was a vertical one through the left rectus healed by first intention. Patient was put on a mixture of iron and arsenic three times a day. The Hb. per cent. was raised to 80 per cent. and the patient was discharged cured on October 25, 1925.

56. Notes on interesting cases 1925 by Dr. R. L. Spittel, F.R.C.S. (England), Surgeon, General hospital, Colombo :—

#### INTERESTING CASES.

1. *Safety pin Impacted in Oesophagus of Infant removed by Gastrotomy* : A child of 10 months was admitted into hospital with a history of having swallowed, five days previously, a safety pin that had been left beside it on the bed. Skiagraphy revealed a safety-pin, open and with point upwards, lodged in the oesophagus at the level of the sixth dorsal vertebra behind the heart. The child seemed quite happy and took its food without discomfort ; the only times it showed uneasiness was when the sternum was pressed upon and when it attempted to crawl. Pappy food for 4 days failed to dislodge the 'pin.

Ten days after the accident gastrotomy was done and the pin removed by introducing a coincatcher through the cardiac orifice and withdrawing it through the stomach. The operation was by no means easy owing to the small size of the organs and the disproportionate instruments at one's disposal. The child left hospital in one week.

2. *Rupture of small intestine caused by effort to lift a very heavy stone* : A sinhalese of forty-five strained hard to lift a stone beyond his power. Suddenly he experienced a burning pain "as if a fire-brand was applied within the abdomen." He cried and rolled about in agony and was brought into hospital eighteen hours after the accident. At first he refused operation. Within five days a fusiform swelling, very like a distended bladder formed in the hypogastrium. On opening the abdomen there was a gush of gas and liquid faeces. The cavity which was localised was merely drained without disturbing adhesions or attempting to find the rent. A faecal fistula persisting, 4 days starvation supplemented by rectal feeding was imposed. This cured the fistula.

3. *Haematemesis and Melaena* and other symptoms such as hunger-pain, simulating a duodenal ulcer, were cured merely by appendicectomy-exploratory laparotomy having revealed no ulcer of stomach or duodenum.



LUPOID EPITHELIOMA, *vide* PAGE 63.



ULCERATING GRANULOMA OF NOSE, *vide* PAGE 63.



4. *Strangulated Inguinal Hernia without pain.*—Six days previous to admission patient, a man of fifty, suddenly noticed an irreducible lump in the left groin. Three days later vomiting supervened. On admission there was faecal vomiting and abdominal distension: pulse 96, temperature 97°. There was no pain at any time. Operation revealed a gangrenous kunckle of small intestine tightly nipped at the internal abdominal ring. The explanation of the absence of pain probably lay in the fact that the mesentery was not involved in the constriction. It is a common experience that the gut may be handled or divided in a conscious patient, as long as the mesentery is not pulled upon, without causing pain. The gangrenous loop of gut was merely left exposed in the wound. Patient recovered.

5. *Strangulated Hernia into the Pouch of Douglas*, the neck of which was narrowed by an impacted ovarian tumour. The symptoms were those of acute obstruction. At operation 2 feet of gangrenous ileum were disengaged from a cavity, with very constricted neck, lined in front by a pyometic uterus, behind by an impacted ovarian cyst. The walls of the cavity were lined with gangrenous sloughs. There was nothing for it but to do ovariectomy, hysterectomy, intestinal resection and anastomosis, all at one operation. Patient did not survive.

6. "*Lunacy*" cured by *Mastoidectomy*.—A Tamil of twenty-five was brought into hospital in charge of an asylum attendant ceaselessly moving his head from side to side, and with a slightly discharging ear. He would answer no questions and no history whatever was obtainable. Mastoidectomy was done and pus was evacuated from the middle ear. On recovery from anaesthesia the lateral movement of the head had ceased and reason returned. He then said that a month previously he had been in the lunatic asylum for one week, and an attendant had boxed his ear making it bleed. Shortly afterwards he had pain in the ear, and since then did not know what had happened to him until he found himself in hospital recovering from the operation.

7. *Tooth in Nose.*—A Sinhalese youth came in with a glistening white body within the left nostril causing obstruction. This proved to be a canine tooth securely anchored to the septum and floor of the nose. A chisel had to be used to remove it. The condition was probably due to an infected dental cyst which had discharged into the nose and fixed the tooth by periostitis.

8. *Ulcerating Granuloma of Nose.*—This very interesting, if repulsive, case provoked a deal of discussion. From microscopic appearance it was variously diagnosed as epithelioma, sarcoma, and granuloma. A section sent to the Tropical School in London confirmed the diagnosis of granuloma; so did its rapid subsidence under a mixture of antimony tartrate Gr.  $\frac{1}{2}$  and Potassium Iodide Gr. X. A complete rhinoplasty was performed to repair the hideous defect left after the disappearance of the fungating mass.

9. *A Sublingual dermoid* situated rather to the right of the middle line was distinguished from ranula by (a) its deep position causing submaxillary swelling, (b) absence of sublingual translucency: (c) putty-like contents. The submaxillary route proved to be the best for removal.

10. *Thyrotoxicosis after Hemithyroidectomy.*—A girl of eighteen was suffering from tachycardia thready pulse, and breathlessness on the least exertion, even on attempting to sit up in bed. The right half of the thyroid had been removed five years previously. There was now no evident enlargement of the remaining thyroid. However, in view of the symptoms and their resistance to medical treatment, the left half of the thyroid was removed, the only thyroid tissue left being a small fragment at the isthmus about  $\frac{1}{5}$  of her thyroid tissue. The disappearance of symptoms was dramatic.

11. "*Chauffeur's fracture.*"—Indirect injury acting on the butt of the palm due to a back fire while cranking a car caused the head of the ulna to project through a flesh wound on the inner side of the wrist and fractured the radius 3 inches above the lower end, analagous to a petts, fracture of the leg. The usual type of chauffeurs' fracture is like a Colles's fracture.

12. *Liver abscess in a boy of 14 years.*—The earliest age at which I have seen such an abscess.

13. "*Lupoid Epithelioma.*"—I coin this phrase to fit the clinical behaviour of this very unusual case. Fourteen years previously the patient, a man of sixty-five, had been bitten by a dog on the left ankle; two months later there appeared on the external malleolus an itching nodule which he got accustomed to scratch. Gradually, in the course of fourteen years, the lesion spread to its present size almost completely encircling the ankle. The remarkable feature of the case is that, while it is an Epithelioma microscopically, it behaves in lupoid fashion healing into a pink glabrous scar at the back while it advances at the edge. We can only explain its nature by surmising that it is a very quiet epithelioma and that, while it spreads into healthy tissues at the weakly resisting edge, it is cured by fibrotic reaction behind, after the manner of an atrophic scirrhous of the breast.

#### TREATMENT OF INFECTIONS.

Infections constitute at least three-fourths of the cases a Surgeon has to deal with. It is perhaps a truism that the more experienced a Surgeon becomes in the treatment of infections, the less inclined is he to interfere too much with nature's processes; where previously he rushed into radical procedures, later he finds himself acting more circumspectly, lest he upsets the beautiful balance nature so patiently provides. In the treatment of an ulcer, for instance, it is the recognition of the fact that one cannot contribute a single cell towards the healing process that is the basis of sound unmeddlesome treatment. Deep suppurating sinuses of the pelvis and abdomen are often cured, provided no foreign body is present, by leading a soft rubber catheter down to the bottom of the sinus and continually drenching with carbolic hyper-tonic saline solution introduced by the drip method. Faecal fistulae following gangrenous appendicitis or perforated intestinal ulcers may be cured by nothing more than daily enemata supplemented, if need be, by a few days starvation. In pyoceles and haematocoeles the testicle may be saved by making a large incision into the sac, swabbing it thoroughly with zinc chloride, and packing it with iodoform gauze which is gradually removed in the course of about three days; after which carbolic saline or chlorogen drip is instituted until granulations are established and adhesive obliteration of the sac supervenes.

When a mass of adhesions surrounding an acutely inflamed appendix is not adherent to the parietal peritoneum (or when a liver abscess is not adherent to the anterior abdominal wall) the safest policy is merely to place a drainage tube down to the site of infection and pack it round with gauze. In a few days either a walled-off abscess discharges through the wound or the inflammatory mass gradually subsides. If necessary the appendix is removed later. It is better to save a patient with two operations than kill him with one.

In suppurating joints the sequence of treatment is (1) absolute rest on a splint (2) repeated aspirations: (3) small incision, evacuation of semi solid sero-pus, and closure of wound: (4) incision irrigation and drainage, a last resort in hopeless cases with certain supervision of ankylosis. By following this gradation of treatment carefully, with an eye on the temperature chart, many a joint that would otherwise be hopelessly crippled is saved.

#### CANCER.

My statistics only deal with a fraction of the cases admitted into the hospital during the year, and include 44 cases; even so a few salient facts leap to the eye which of course should be confirmed by only reference to a longer series through a more prolonged period, such as that previously provided by me.

[illegible]

(Tetanus record 1922-1925).

Year.	Total No. of Cases admitted.	Total No. of Deaths.	Total Percentage of Deaths.	Mortality Percentage.						According to (b) Duration of Symptoms.				Site of Injury.			Remarks.	
				(a) Incubation Period.								Below 10 Days.	Over 10 Days.	Lower extremity	Others.	Not Traceable.	Nature of Injury.	
				Below 7 Days.	7-14 Days.	Over 14 Days.	Not definite.											
				M	M per cent.	M	M per cent.	M	M per cent.	M	M per cent.							
1922	35	22	68	9	100	7	66	4	25	2	100	99	15	20	10	5	Nail pricks 7 Infection 23 Not definite 5	
1923	46	28	61	12	90	8	50	—	—	3	50	93	6	27	10	9	Nail pricks 2 Thorn pricks 5 Stone 4 Puerperal 1 Infection 25 Not definite 9	
1924	43	25	58	15	63	4	50	1	14	4	80	84	6	20	14	9	Thorn pricks 9 Burns 2 Tattoo making 1 Puerperal 1 Infection 21 Not definite 9	
1925	53	30	56	17	74	8	50	1	11	3	60	82	—	26	15	12	Thorn pricks 5 Vaccination 1 Puerperal 4 Infection 31 Not definite 12	
1922 to 1926	177	105	59	53	82	27	61	6	12	12	75	89	7	93	49	35	Nail pricks 9 Thorn pricks 19 Puerperal 6 Burns 2 Stone 4 Tattoo making 1 Vaccination 1 Infection 100 Not definite 35	

M = Mortality. M per cent = Mortality percentage.

57. Notes on interesting cases 1925 by Dr. E. C. Alles, F.R.C.S., Surgeon, General Hospital, Colombo :—

During the year 1925 I had the good fortune to have under my care a great variety and a large number of cases due to the fact that I was in charge of Dr. A. M. de Silva's wards in addition to my own. I would like to summarise some of the important groups of operations that were performed by me in 1925,

*Appendicitis.*—(a) With local suppuration or general peritonitis numbered 23 and were taken up as emergency cases. Of these 15 recovered and 8 died, all the deaths being due to general peritonitis.

(b) 26 cases of *simple appendicitis*, that is cases of appendicitis in the early stages and without any complications were done with no deaths.

This brings forcibly to one's mind the importance of operating early and the dangers there are in delaying and postponing operative treatment. Although it is true that the catarrhal type of appendicitis can be cured by medical treatment, one is not quite sure from the symptoms that a given patient is suffering from this particular type only and not from an ulcerative or suppurative or gangrenous type; and further although the patient can be cured on one or two occasions of catarrhal appendicitis, yet that patient may get a suppurative or gangrenous type of appendicitis on the next occasion, making the operation at this stage more difficult and more risky. It is also well known that one attack of appendicitis predisposes the patient to recurrent attacks, and one of them may be of the fulminating gangrenous variety.

*Herniotomies.*—(a) Forty-three cases of reducible hernias were operated upon without a single death. On the other hand (b) out of 15 cases of strangulated hernias, there were 11 recoveries and 4 deaths. The cause of death in one of these cases was a diffuse thrombosis of the superior mesenteric vessels; in another, the strangulation had existed for a week (the patient having tried "native treatment" up till then) and about 6 feet of the small intestines were gangrenous and had to be resected. There was also general peritonitis. This was the worst case of strangulated hernia that I had come across.

*Liver Abscess.*—Fifteen cases were operated upon, 11 recoveries and 4 deaths; and one case of subphrenic abscess, a rare affection, with recovery. In addition to operative treatment, in liver abscess I always give a course of injections of emetine.

*Rupture of Organs.*—There was one case of rupture of the urinary bladder and one case of rupture of the R. kidney, both of which recovered after operative treatment.

*Exploratory Laparatomies.*—Nineteen in number were done all as emergencies, with 8 recoveries and 11 deaths, most of the deaths were due to general peritonitis.

*Treatment of Scabies.*—During the year Marcussen's ointment was introduced in the treatment of scabies with good results. This preparation is superior to the old time-honoured treatment of the disease by sulphur ointment.

*Interesting Cases.*—During the year I had some very interesting cases under my care, some of them I reported in the B. M. J. and others to the local branch of the B. M. A. A resume of some of these cases I give below.—(a) I had 3 cases of *tubercular peritonitis*, two of which were transferred by Dr. Mack to me for surgical treatment. The surgical treatment, which was resorted to, was a new one and consisted in passing

oxygen previously warmed-into the abdominal cavity for 15 minutes, pushing the nozzle in various directions and between the coils of the intestines was the peritoneal fluid evacuated and abdominal wound closed without drainage. The immediate result on discharging the patient was good, but the patients insisted on leaving the hospital too soon, about 2 months after the operation, and have been lost sight of.

*Torsion of the right Fallopian tube* was an interesting case owing to its rarity. This patient was transferred to me from the medical wards with a diagnosis of acute appendicitis. On operating I found instead of an inflamed appendix, a twisted right Fallopian tube. The patient left hospital having recovered. Only a few cases have so far been reported in the medical journals, and the condition simulates appendicitis very closely. The case was reported to the local branch of the B. M. A.

Another interesting case about which I read a paper before the same Society was that of a man who was admitted with a right reducible inguinal hernia. Nothing unusual was suspected until the operation, when I found to my astonishment that amongst the contents of the sac was a well developed uterus and two ovaries. The latter structure was examined microscopically and showed ovarian structure. The patient was a well developed man, with a well developed penis, and was married, but had no children. This was a case of internal hermaphroditism.

*Pyometra.*—This case was sent by a D. M. O. because she had an abdominal tumour and showed signs of intestinal obstruction as well. On opening the abdomen an enlarged non-pregnant uterus was found with its surface inflamed, and to which the coils of intestines were adherent. I closed the abdomen, put the patient in the lithotomy position, dilated the cervix and evacuated several pints of thick creamy pus from inside the uterus. The patient recovered and left hospital in due course.

A large fibroid (pedunculated) growing from the R. Labium majus, and about the size of an unhusked coconut was removed. This is a rare tumour especially in this region.

Another curious case was that of a boy who introduced a piece of stick of about 4 in. long and a little thinner than a lead pencil into his urethra. This piece of wood slipped up and entered the bladder. It could be felt easily by passing a sound. It was removed by a suprapubic cystotomy. On removal phosphates were found deposited on the stick. I have no doubt that had it remained longer it would have formed the nucleus of a large stone at a future date.

Three of four cases of elephantoid conditions of the penis and scrotum were operated upon with success. The operation consisted in removing the thick and redundant skin of the penis and bringing the penis to its normal size and also in removing the large redundant mass of tissues of the scrotum ; and sometimes by combining the operation with orchidectomy in old people.

58. A summary of the work done in the Pathological Department, General Hospital, Colombo, by Dr. W. A. E. Karunaratne, Pathologist :—

The following figures for the year 1924 and 1925 will show the nature and extent of the work carried out and the marked increase in the latter year.

The following specimen were sent for examination and report :—

1924.				1925.			
Urine	..	{	Full report	..	2,588	}	4,008
			Special examination	..	1,387		
			Diastase reaction	..	33		
Sputum	..		For tubercle bacilli, &c.	..	1,611		
Faeces	..		Ova, Amoebae-cysts	..	1,649		
Blood	..	{	Malarial parasites	..	583	}	1,449
			Filaria	..	43		
			Leishman Donovan bodies	..	6		
			B. Pestis	..	169		
			Blood counts, &c.	..	618		
			Estimation of sugar	..	18		
Fluids	..	{	Vandenberg's test	..	12	}	100
			Cerebro spinal				
			Pleural				
			Peritoneal				
			Analysis of gastric contents				
			after test meals	..	87		
Smears for	{	Gonococci			}	119	
		Lepra Bacilli					
		Diphtheria					
		Spirochaetes					
Total				..	9,023		

Full report	..	{	Full report	..	5,253	}	7,167
			Special examination	..	1,888		
			Diastase reaction	..	26		
			Diazo reaction	..	26		
			Cammidges pancreatic test	..	2		
			Tubercle bacilli	..	1,975		
			Elastic tissue	..	26		
			Ova, Amoebae-cysts	..	3,026		
			Taenia	..	4		
			Malarial parasites	..	1,024		
			Filaria	..	54		
			Leishman Dona Bodies	..	9		
			B. Pestis	..	69		
			Bloods counts, &c.	..	753		
Estimation of sugar	..	45					
Vandenberg's test	..	38					
Cerebro spinal	..	146					
Pleural	..	57					
Peritoneal	..	55					
Analysis of gastric contents	..	134					
Gonococci	..	154					
Lepra Bacilli	..	93					
Diphtheria	..	6					
Spirochaetes	..	23					
Actinomycosis, &c.	..	29					
Total				..	14,887		